SLV-E105/E110IT
RMT-V166B

SERVICE MANUAL

AEP Model
RMT-V166B

PHOTO : SLV-E110IT

SPECIFICATIONS

System

Channel coverage
- PAL (B, G, H) :
- VHF E2 - E12
- (comprese channel C) (SLV-E110IT)
- (A - H only For Italy) (SLV-E110IT)
- UHF E21 - E69
- CATV S01 - S03, S1 - S20
- HYPER BAND S21 - S41 (SLV-E105)

Intermediate frequency (SLV-E110IT)
- F1 -1 Video 38.9MHz
- F2 -1 Audio 33.4MHz

RF output signal
- UHF 32 -41

Aerial out
- 75-ohm asymmetrical aerial socket

Inputs/outputs

EURO - AV
- 21 - pin
- Video input : pin 20
- Audio input : pins 2 and 6
- Video output : pin 19
- Audio output : pins 1 and 3

General

Power requirements
- 220 – 240V AC, 50 Hz

Power consumption
- 20W

Operating temperature
- 5 ℃ to 40 ℃

Storage temperature
- – 20 ℃ to 60 ℃

Dimensions
- Approx. 360 × 97 × 309 mm (w/h/d)
- including projecting parts and controls

Mass
- Approx. 4kg

Supplied accessories

Remote commander (1)
R6 (size AA) batteries (2)
Aerial cable (1)
Mains lead (1)
RF screwdriver (1)

Design and specifications are subject to change without notice.

MICROFILM

VHS PAL VIDEO CASSETTE RECORDER

SONY®

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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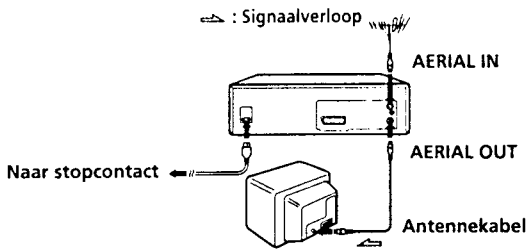
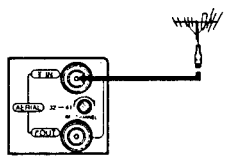
Stap 1

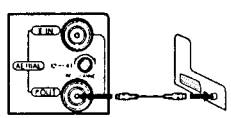
De videorecorder aansluiten



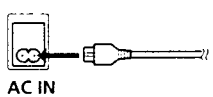
1 Trek de antennekabel uit uw TV-toestel en steek die in de AERIAL IN aansluiting op de videorecorder.



2 Sluit AERIAL OUT van de videorecorder met behulp van de bijgeleverde verbindingskabel aan op de antenne-ingang van uw TV.

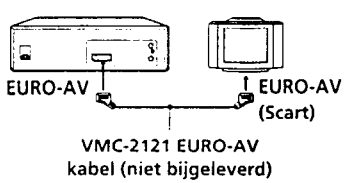


3 Sluit de videorecorder met behulp van het netsnoer aan op het stopcontact.



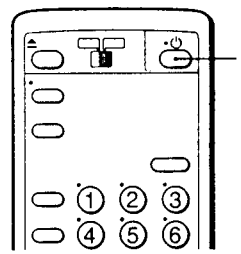
Extra aansluitingen

Wanneer uw TV is voorzien van een EURO-AV (Scart) aansluiting, kan de beeldkwaliteit worden verbeterd door de videorecorder als volgt op de TV aan te sluiten.



Stap 2

De TV afstemmen op de videorecorder



Hiervoor hebt u een voorbespeelde cassette nodig.
Sla deze stap over als u de videorecorder met behulp van de EURO-AV kabel hebt aangesloten op uw TV.

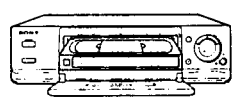
1 Druk op ⏻ (aan/standby) om de videorecorder in te schakelen.

2 Zet uw TV aan en kies een videokanaal.

3 Stem de TV af tussen de UHF-kanalen 32 en 41 zonder beeld en zonder geluid of met enkel een gelijkmatig ruissignaal.

Raadpleeg de gebruiksaanwijzing van uw TV-toestel voor de afstemprocedures.

4 Open het frontpaneel en breng een voorbespeelde cassette in.



De weergave start wanneer het wispreventienokje werd verwijderd.

5 Druk op ▷ PLAY.

6 Stem de TV af op het video-weergavebeeld.

Als het beeld niet helemaal helder is, draait u met de meegeleverde schroevedraaier aan het RF CHANNEL schroefje achterop de videorecorder.

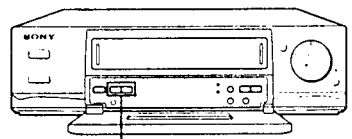
SECTION 1
GENERAL

SLV-E105/E110IT

This section is extracted from SLV-E105 instruction manual.

Stap 3

De videorecorder afstemmen op TV-kanalen



▼/▲ AUTO TUNING

1

Stem de TV af op het videokanaal:

- Als de TV enkel met behulp van de antennekabel is aangesloten op de videorecorder, moet de TV al zijn ingesteld op de zenderpositie voor de videorecorder.
- Als de TV met behulp van de EURO-AV kabel is aangesloten op de videorecorder, stelt u de TV in op de video-ingang.

2 ▽ △ AUTO FINE TUNING

Open het frontpaneel van de videorecorder en hou de AUTO TUNING ▼ en ▲ toetsen samen 2 tot 3 seconden ingedrukt.

De videorecorder begint automatisch kanalen af te stemmen. Wanneer alle beschikbare kanalen zijn afgesteld, verschijnt het kanaal in zenderpositie 1 op het scherm.

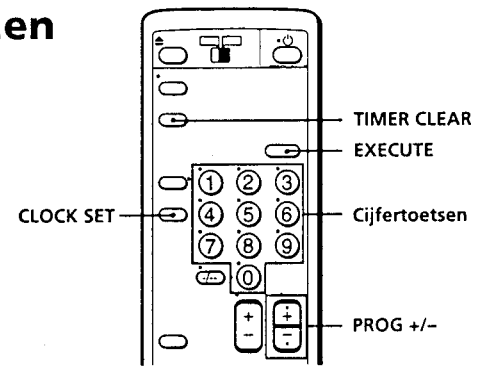
Zenderposities wijzigen

Als de zenders niet zijn opgeslagen onder dezelfde zenderposities als van uw TV, wijzigt u de posities als volgt.

1 Open het frontpaneel van de videorecorder en druk op TUNER PRESET.
2 Druk op PROGRAM +/– om de zenderpositie te kiezen die u wilt wijzigen.
3 Druk op de cijfertoetsen op de afstandsbediening om de andere zenderpositie in te voeren.
4 Druk op EXECUTE op de afstandsbediening.
5 Druk op TUNER PRESET.

Stap 4

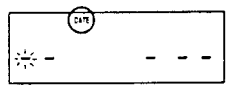
De klok instellen



1 CLOCK SET

Druk op CLOCK SET.

"DATE" verschijnt in het uitleesvenster.

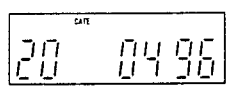


2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

Stel de dag, de maand en het jaar in met behulp van de cijfertoetsen.

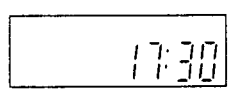
Bij het invoeren van een ééncijferig getal, drukt u eerst op 0 alvorens het cijfer in te voeren.

Wanneer u zich vergist, drukt u op TIMER CLEAR om terug te keren naar de positie die u wilt corrigeren.



3 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

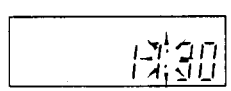
Stel de uren en minuten in met behulp van de cijfertoetsen.



4 EXECUTE

Druk op EXECUTE om de klok te starten.

De klok begint te lopen vanaf nul seconden.



Omschakelen tussen zomer- en wintertijd

1 Druk op CLOCK SET

2 Druk op de PROG +/– toetsen om de tijd een uur vooruit- of achteruit te zetten.

3 Druk op EXECUTE.

Extra instructies bij het afstemmen

Het beeld van een zender verbeteren

1 Open het frontpaneel van de videorecorder en druk op TUNER PRESET.

2 Druk op PROGRAM +/– om de zenderpositie te kiezen waarvan het beeld niet scherp is.

3 Druk op FINE TUNING (▼/▲) tot u het scherpste beeld bekomt.

4 Druk op TUNER PRESET.

Handmatig afstemmen op specifieke zenders

Op zenders met zwakke signalen kan eventueel niet automatisch worden afgestemd. In dit geval kunt u er handmatig op afstemmen.

1 Open het frontpaneel van de videorecorder en druk op TUNER PRESET.

2 Druk op PROGRAM +/– om de zenderpositie te kiezen.

3 Druk op SEARCH. De videorecorder begint een zender te zoeken en laat de eerste die hij vindt op het scherm verschijnen. Druk herhaalde malen op SEARCH tot de gewenste zender op het scherm verschijnt.

4 Herhaal stap 2 en 3 om op andere zenders af te stemmen.

5 Druk op TUNER PRESET.

Ongewenste zenderposities wissen

Gewiste posities worden overgeslagen wanneer u op de PROGRAM +/– toetsen drukt.

1 Open het frontpaneel van de videorecorder en druk op TUNER PRESET.

2 Druk op PROGRAM +/– om de zenderpositie te kiezen die u wilt wissen.

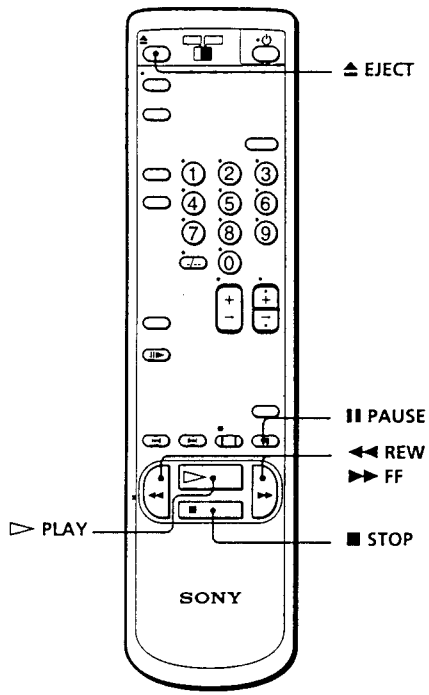
3 Druk op ERASE. "S" verschijnt op het uitleesvenster.

4 Herhaal stap 2 en 3 om andere posities te wissen.

5 Druk op TUNER PRESET.

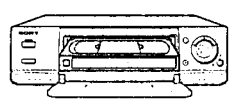
Om een gewiste positie te herstellen, drukt u in stap 3 op ERASE zodat "S" verdwijnt.

Een band afspelen



1 Zet uw TV aan en zet die op het videokanaal.

2 Open het frontpaneel en plaats een band in de videorecorder.



De videorecorder schakelt automatisch in. Als het wispreventienokje van de band is verwijderd, start de weergave onmiddellijk.

3 ▷ PLAY Druk op ▷ PLAY.

Als de band ten einde is, wordt hij automatisch helemaal teruggespoeld.

Extra handelingen

Om	Druk op
De weergave te stoppen	■ STOP
De weergave tijdelijk te onderbreken	II PAUSE
De weergave te hervatten na pauzee	II PAUSE of ▷ PLAY
Vooruit te zoeken	▶▶ FF tijdens het afspelen of pauzeren
Achteruit te zoeken	◀◀ REW tijdens het afspelen of pauzeren
Snel vooruit te spoelen	▶▶ FF tijdens stop
Achteruit te spoelen	◀◀ REW tijdens stop
De cassette uit te werpen	⏏ EJECT

De bandteller gebruiken

Als u een bepaald punt van de band later wilt terugvinden, druk dan op COUNTER RESET. De teller springt dan weer op "0H00M00S". Met behulp van de teller kunt u dit punt dan achteraf snel terugvinden.

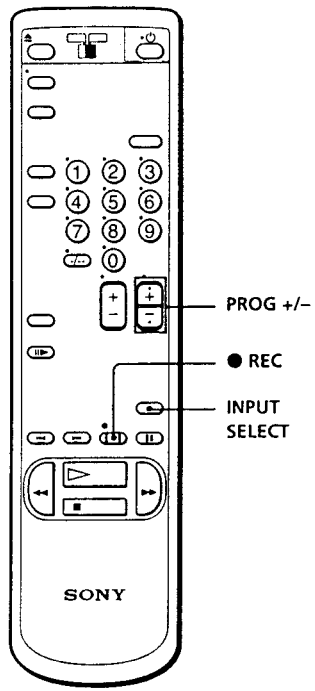
Tip

- U kunt een Sony TV bedienen met de afstandsbediening door gewoon TV/VTR op TV te zetten. De toetsen met een stip (•) fungeren als TV-bedieningstoetsen.

Opmerkingen

- Wanneer een cassette wordt ingebracht, springt de teller terug naar "0H00M00S".
- De teller stopt bij een onbespeeld gedeelte.

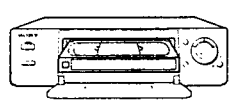
TV-programma's opnemen



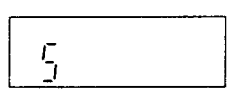
Deze videorecorder neemt alleen op in de SP-stand.

1 Zet uw TV aan en zet die op het videokanaal.

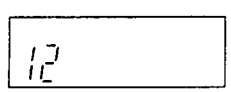
2 Breng een cassette in.



3 INPUT SELECT Druk op INPUT SELECT tot er een zenderpositie op het uitleesvenster verschijnt.



4 Druk op PROG +/– om de zenderpositie te kiezen die u wilt opnemen.



5 ●REC Druk op ● REC om de opname te starten.

De opname stoppen

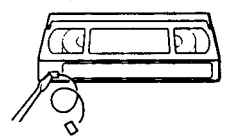
Druk op ■ STOP.

Een TV-programma bekijken terwijl u een ander programma opneemt

1 Druk op TV/VTR om de VTR indicator op het uitleesvenster te laten verdwijnen.
2 Als de TV is aangesloten op de EURO-AV ingang van de videorecorder, zet u de TV op TV-ingang. Indien dit niet zo is, kunt u deze stap overslaan.
3 Kies een andere zenderpositie op de TV.

Een opname beveiligen

Om te voorkomen dat een opname per ongeluk wordt gewist, verwijdert u het wispreventienokje zoals de afbeelding laat zien. Wilt u toch iets opnemen op een videocassette waarvan het wispreventienokje is verwijderd, plak de opening dan af.

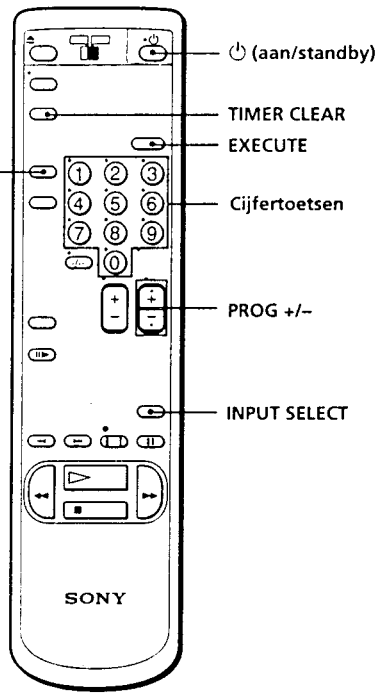


Wispreventienokje

Tips

- U kunt een zenderpositie kiezen met behulp van de cijfertoetsen op de afstandsbediening. Voor tweecijferige getallen drukt u op -/-- (tientallen) en vervolgens op de cijfertoetsen.
- Indien u wilt opnemen van een ander apparaat dat is aangesloten op deEURO-AV ingang, druk dan in stap 3 op INPUT SELECT. "AV" verschijnt op het uitlessvenster.
- Wenst u tijdens het opnemen geen TV te kijken, dan kunt u die afzetten.

TV-programma's opnemen met behulp van de timer



U kunt de videorecorder automatisch een TV-programma laten opnemen door de start- en stoptijd in te stellen. U kunt tot zes opnamen programmeren over een periode van één jaar.

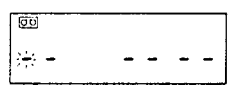
Alvorens u begint:

- Controleer of de klok juist is ingesteld.
- Breng een videocassette met wispreventienokje in. Controleer of de totale speelduur van de cassette langer is dan de duur van de opname.

1 TIMER SET

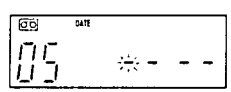
Druk op TIMER SET.

De TIMER indicator op de videorecorder licht op.



2 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

Kies de zenderpositie door de cijfertoetsen in te drukken.

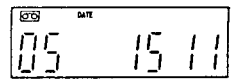


Bij het invoeren van een ééncijferig getal, drukt u eerst op 0 alvorens het cijfer in te voeren.

Om op te nemen van andere apparatuur die is aangesloten via de EURO-AV-aansluiting, drukt u op INPUT SELECT om "AV" in het uitleesvenster te laten verschijnen.

3 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

Stel de datum en de maand waarop de opname dient te starten in met behulp van de cijfertoetsen.



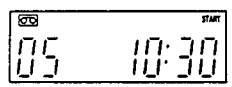
Alvorens de datum in te stellen:

- Om eenzelfde programma dagelijks op te nemen, drukt u herhaalde malen op PROG+ tot "E" verschijnt.
- Om eenzelfde programma wekelijks op te nemen, drukt u herhaalde malen op PROG+ tot "W" verschijnt.

Wanneer u zich vergist, drukt u op TIMER CLEAR om terug te keren naar de positie die u wilt corrigeren.

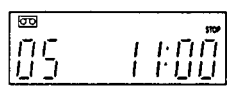
4 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

Stel het tijdstip waarop de opname dient te starten in met behulp van de cijfertoetsen.



5 ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⓪

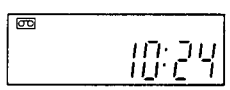
Stel het tijdstip waarop de opname dient te stoppen in met behulp van de cijfertoetsen.



6 EXECUTE

Druk op EXECUTE.

De videorecorder is klaar voor opname.



Om een andere timer-instelling uit te voeren, herhaalt u stap 1 tot 6.

De opname stoppen

Druk op ■ STOP.

bladzide

TV-programma's opnemen met behulp van de timer (vervolg)

Opmerkingen

- Wanneer u een cassette inbrengt waarvan het wispreventienokje is verwijderd, wordt deze uitgeworpen wanneer u op EXECUTE drukt. De TIMER indicator op de videorecorder knippert.
- Wanneer de band tijdens de opname ten einde is, stopt de opname en schakelt de videorecorder uit. De band wordt niet teruggespoeld naar het begin.
- De TIMER indicator op de videorecorder knippert in de volgende gevallen:
  - Wanneer u op ⏻ (aan/standby) drukt zonder dat er een cassette is ingebracht.
  - Wanneer u de videorecorder gebruikt tot vijf minuten vóór de timergestuurde opname start.
- Bij opname van satellietprogramma's mag u de ontvanger pas uitschakelen na de opname.

De videorecorder gebruiken na het instellen van de timer

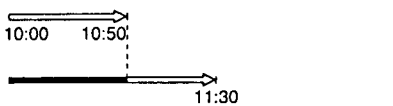
Om de videorecorder te bedienen vooraleer een timergestuurde opname start, drukt u gewoon op ⏻ (aan/standby). De indicatie "TIMER" verdwijnt dan en de videorecorder schakelt aan. Vergeet niet na het gebruik van de videorecorder op ⏻ (aan/standby) te drukken om hem terug te stellen.

Tijdens een opname kunt u ook de volgende handelingen verrichten:

- de teller terugstellen;
- de timerinstelling controleren;
- een ander TV-programma bekijken.

Als timer-instellingen elkaar overlappen

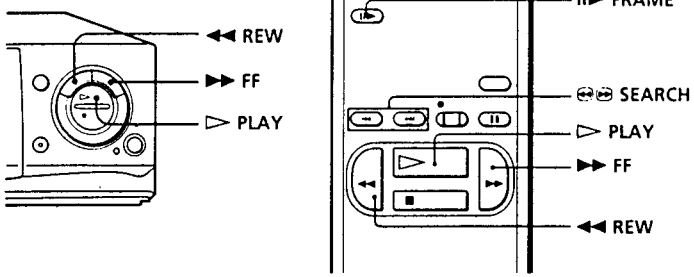
De videorecorder neemt geen programma's op die elkaar overlappen. Indien instellingen elkaar overlappen, moet u deze wijzigen.



De programma's krijgen voorrang in volgorde van de lijst. Programma 2 wordt geannuleerd.

1-7

Afspelen/zoeken met verschillende snelheden



Afspeelmogelijkheden	Handeling
Afspelen met hoge snelheid	Tijdens het afspelen of pauzeren: • Druk op ⊖ SEARCH of ⊕ SEARCH. of • Druk op ▶▶ FF of ◀◀ REW. Laat de knop los om verder te gaan met afspelen of pauzeren.
Snel vooruit-/ terugspoelen	Druk op ▶▶ FF of ◀◀ REW terwijl de band stilstaat.
Beeld weergeven tijdens vooruitspoelen	Druk op ▶▶ FF tijdens het vooruitspoelen. Laat ▶▶ FF los om verder te gaan met vooruitspoelen.
Beeld weergeven tijdens terugspoelen	Druk op ◀◀ REW tijdens het terugspoelen. Laat ◀◀ REW los om verder te gaan met terugspoelen.
Beeld voor beeld afspelen	Druk tijdens het afspelen of pauzeren op II▶ FRAME.

Om de normale weergave te hervatten

Druk op ▷ PLAY.

Tip

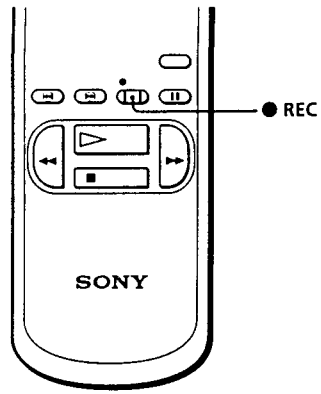
- Stel het beeld af met de ▼/▲ TRACKING/ STILL ADJUST toetsen als het beeld tijdens het pauzeren trilt.

Opmerkingen

- Tijdens deze handelingen wordt het geluid onderdrukt.
- Tijdens deze handelingen kunnen strepen of sneeuw in het beeld verschijnen.

1-8

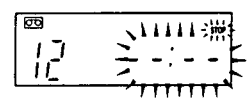
TV-programma's opnemen met de quick timer



Nadat een opname op de gewone manier werd gestart, kunt u de videorecorder na een bepaalde tijdsspanne automatisch de opname laten stoppen.

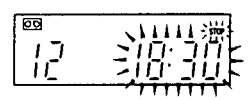
1 Druk tijdens het opnemen tweemaal op ● REC.

"STOP - - - -" knippert.



2 Druk herhaalde malen op ● REC om de duur in te stellen.

Door elke druk op de toets verspringt de tijd in stappen van 30 minuten.



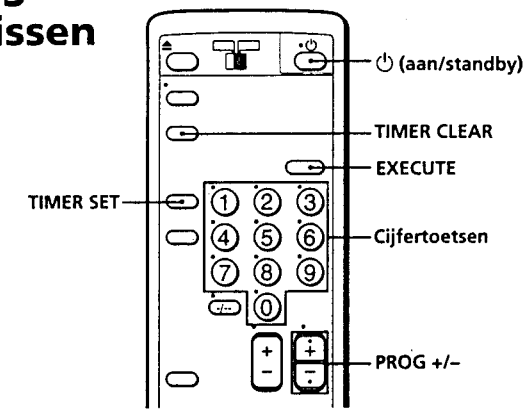
De duur controleren of verlengen

Druk eenmaal op ● REC. De duur verschijnt gedurende ongeveer 10 seconden. Om de duur te kunnen verlengen moet u binnen de 10 seconden nogmaals op ● REC drukken.

De opname stoppen

Druk op ■ STOP.

Timer-instellingen controleren/wissen

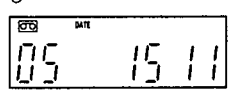


1 Druk op ⏻ om de videorecorder aan te zetten.

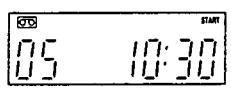
2 Druk tweemaal op TIMER SET om over te schakelen naar de controlestand.

3 Controleer de timer-instellingen.

- Bij elke druk op TIMER SET verschijnen de vooringestelde programma's (datum en zenderpositie) achtereenvolgens.



- Bij elke druk op PROG – verschijnen achtereenvolgens de starttijd, de stoptijd en de datum van het programma.



Om de controlestand te verlaten, drukt u na weergave van het laatste vooringestelde programma op TIMER SET. De videorecorder keert dan terug naar de opname-wachtstand.

4 De timer-instelling wissen of wijzigen.

- Om de instelling te wissen, drukt u op TIMER CLEAR terwijl het programma dat u wilt wissen is aangegeven. Het uitleesvenster keert dan terug naar de normale stand. Als er geen andere timer-instellingen meer zijn, keert de videorecorder terug naar de opname-wachtstand.
- Om de instelling te wijzigen, wist u het programma dat u wilt wijzigen en stelt u de timer opnieuw in (zie blz. 14).

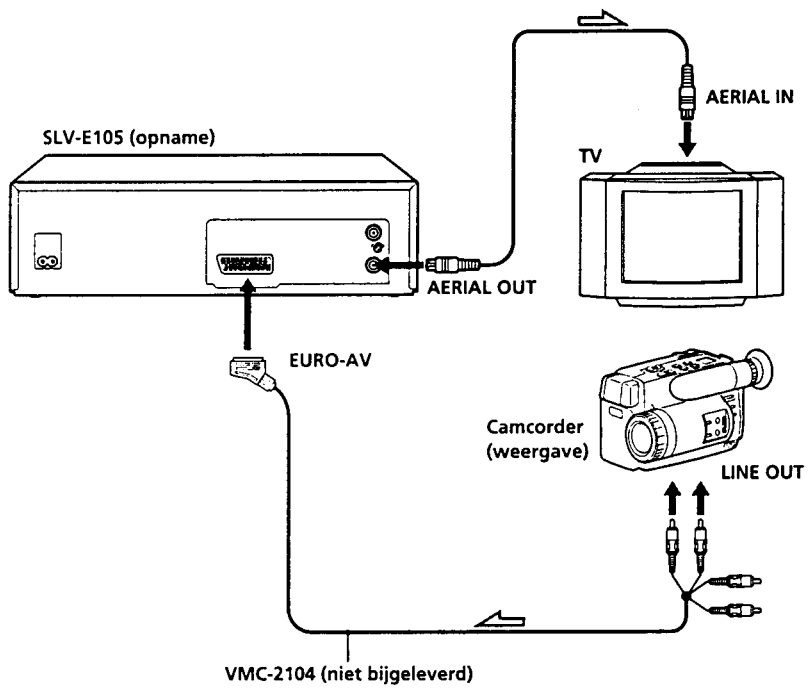
Opmerkingen

- Wanneer er zes programma's werden vooringesteld, verschijnt het eerste programma wanneer TIMER SET in stap 2 eenmaal wordt ingedrukt.
- De timer-instelling die al is gestart, kan niet worden gewist.

1-9

Monteren met een tweede videorecorder

Aansluiten voor opname op deze videorecorder

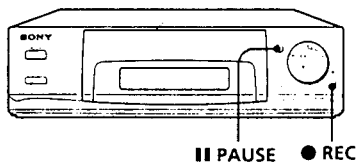


: Signaalverloop

bladzide

Monteren met een tweede videorecorder (vervolg)

Bediening bij opname op deze videorecorder



Voordat u met het monteren begint

Druk op INPUT SELECT om "AV" te laten verschijnen op het uitleesvenster.

1 Leg de te kopiëren band in de andere videorecorder (weergave). Zoek het punt waarop het afspelen moet beginnen en druk op de pauzetoets.

2 Leg een band in deze videorecorder (opname). Zoek het punt waarop de opname moet beginnen en druk op II PAUSE.

3 Druk op ● REC op deze videorecorder en schakel de opnamepauzefunctie in.

4 Om de montage te starten, drukt u op de II PAUSE-toetsen op beide videorecorders en schakelt u de pauzefunctie uit.

De opname stoppen

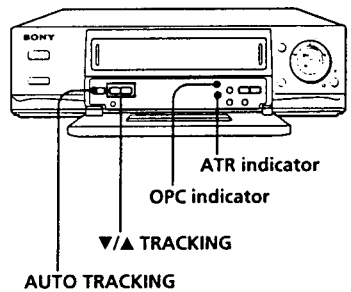
Druk op STOP op beide videorecorders.

Tips

- Gebruik de II PAUSE-toetsen op beide videorecorders om de montage zo nauwkeurig mogelijk te laten verlopen.
- Voor het weglaten van ongewenste delen tijdens het monteren, drukt u op II PAUSE op deze videorecorder aan het begin van het gedeelte dat u wilt overslaan. Als het voorbij is, drukt u weer op II PAUSE om de opname te hervatten (Assemble Editing).

1-10

Het beeld afstellen



De spoorvolging afstellen

Hoewel de videorecorder de spoorvolging automatisch regelt als er een band wordt afgespeeld, kan er toch storing optreden als de band onder slechte omstandigheden werd opgenomen. In dat geval kunt u de spoorvolging manueel afstellen.

Druk op de ▼/▲ TRACKING toetsen om het scherpste beeld te bekomen (de spoorvolgingspositie-indicator verschijnt). Indien u geen scherp beeld krijgt door handmatige afstelling, druk dan op de AUTO TRACKING toets om terug te keren naar automatische afstelling. In dit geval knippert de ATR indicatie.

Betreffende "Trilogic" Optimum Picture Control (OPC)

"Trilogic" Optimum Picture Control (OPC) verbetert automatisch de opname- en weergavekwaliteit door de videorecorder af te stemmen op de staat van de videokoppen en de band.

"Trilogic" bij weergave

De "Trilogic" OPC-functie werkt automatisch met elk soort band, ook gehuurde banden en banden die niet met OPC werden opgenomen.

"Trilogic" OPC bij opname

Telkens wanneer u een band in de videorecorder stopt voor een opname, zal de recorder zich met behulp van de "Trilogic" OPC-functie aanpassen aan de band (de "Trilogic" OPC-indicator op de videorecorder knippert snel). Deze instelling blijft behouden tot de cassette wordt uitgeworpen.

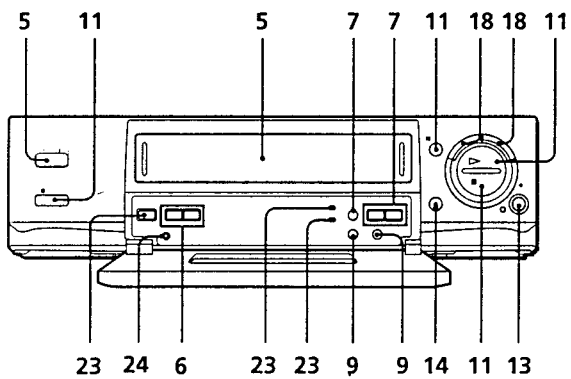
Opmerking

- De videorecorder begint pas na enkele seconden op te nemen omdat hij de band eerst analyseert.

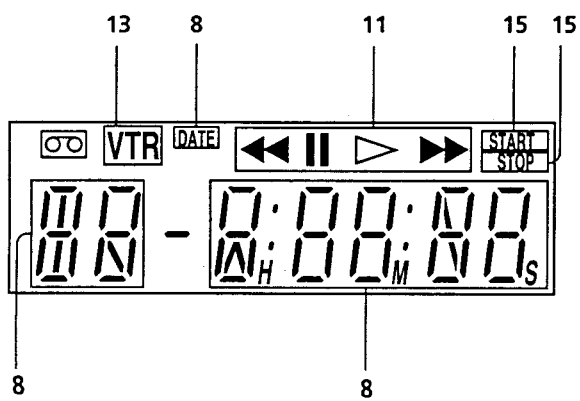
Bedieningselementen

Raadpleeg de opgegeven bladzijden voor meer gedetailleerde informatie.

Frontpaneel



Uitleesvenster



1-11 E

SECTION 2
DISASSEMBLY

1-1. REMOVAL OF CABINET, MECHANISM UNIT, AND MAIN BOARD

REMOVING THE CABINET PARTS (Fig. 1-1-1)

1. Remove the cabinet and bottom cover by removing the four screws ① and four screws ②.
2. Remove the front panel by removing the locks of the clamps (A) using a screwdriver, etc., and slightly rotating the bottom part in the direction of the arrow.

Notes:
- Electrical adjustments for the this model can be performed with only the cabinet removed.
- When replacing the bottom cover, do not tighten the screws ② too much. Excess tightness may damage the screw taps on the chassis.

REMOVING THE MECHANISM MAIN UNIT AND THE CP-1 PWB ASSEMBLY (Fig.1-1-2 and 1-1-3)

After removing the cabinet parts, remove the mechanism unit and the CP-1 PWB assembly connected as follows.

1. First, remove the red screw ③ of the TB-1 PWB, spread out lock clamps (B) and (C) in the arrow direction slightly and remove TM-1 PWB and TM-2 PWB as shown in Fig. 1-1-2.
2. Remove the screw ④ at the back of the chassis.
3. Remove the red screw ⑤ in the chassis, remove the red screw ⑥, and remove the holder in this order.
4. Remove the two screws ⑦ and two screws ⑧ of the mechanism unit. The two screws ⑧ of the cassette tray can be removed easily by pushing the tray lock lever in the arrow direction to remove the lock as shown in the enlarge view A and by pushing the lid opener lever in the arrow direction to remove the lock as shown in the enlarge view B.
5. Lift up the whole mechanism unit and main board (CP-1 PWB assembly), and as shown in Fig. 1-1-3, push the two lock clamps (D) of the chassis in the arrow direction so that they can be removed from the chassis.

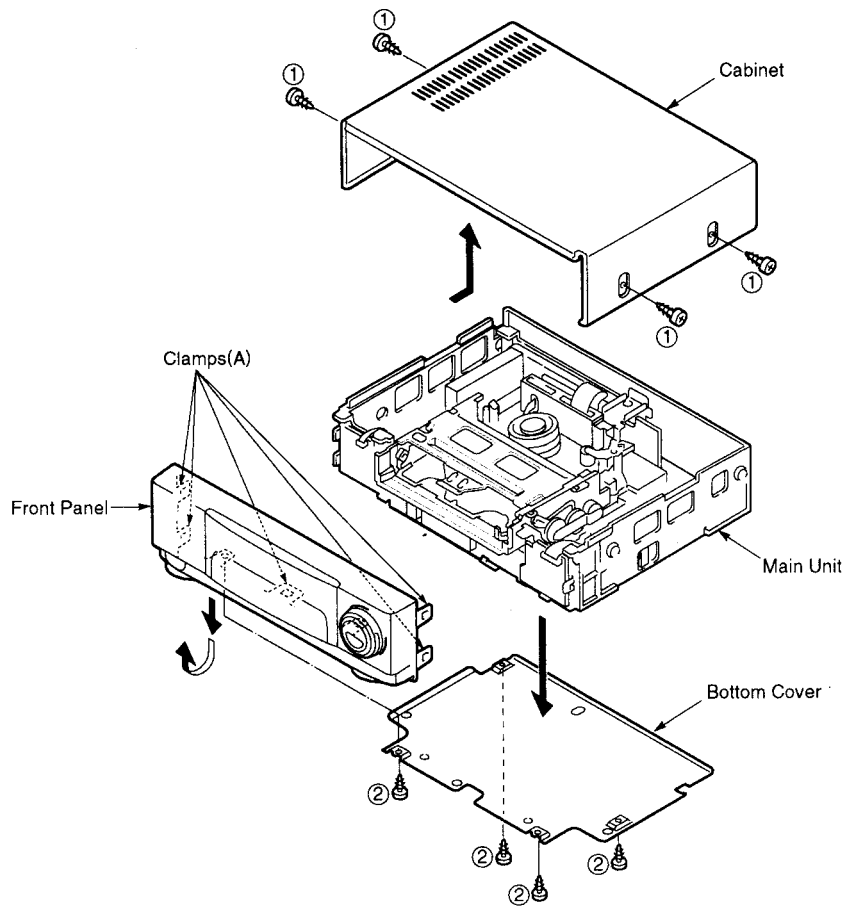


Fig. 1-1-1

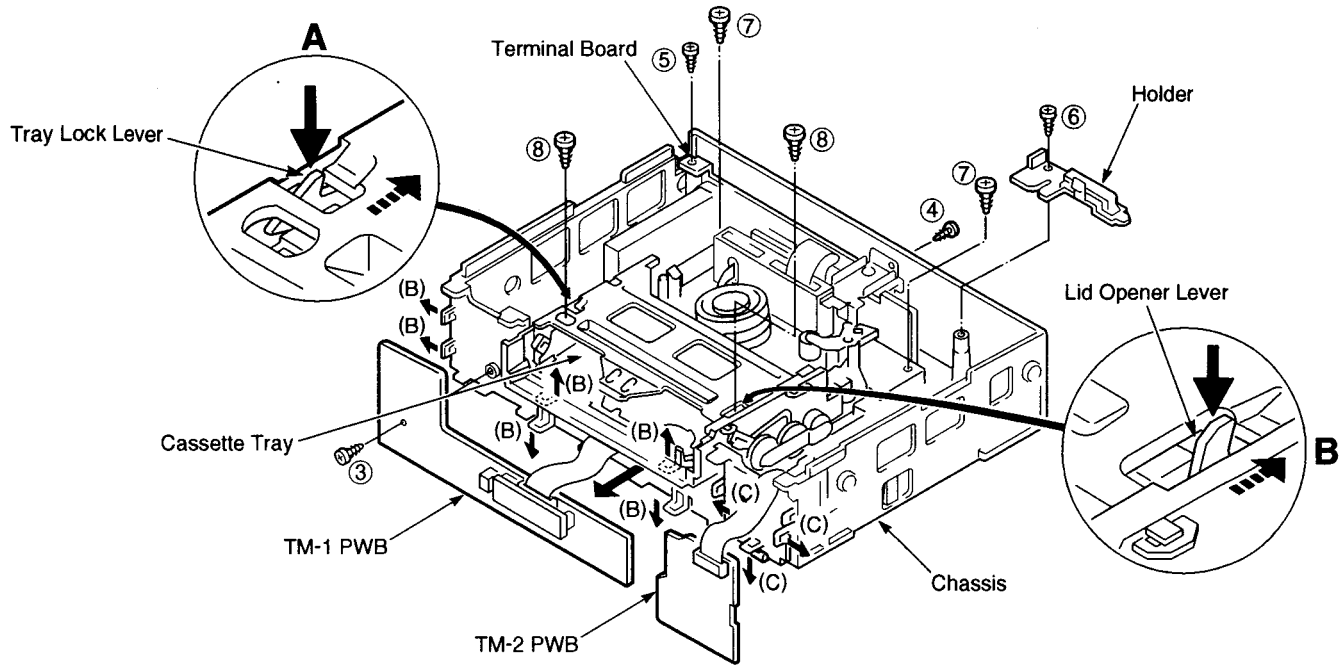


Fig. 1-1-2

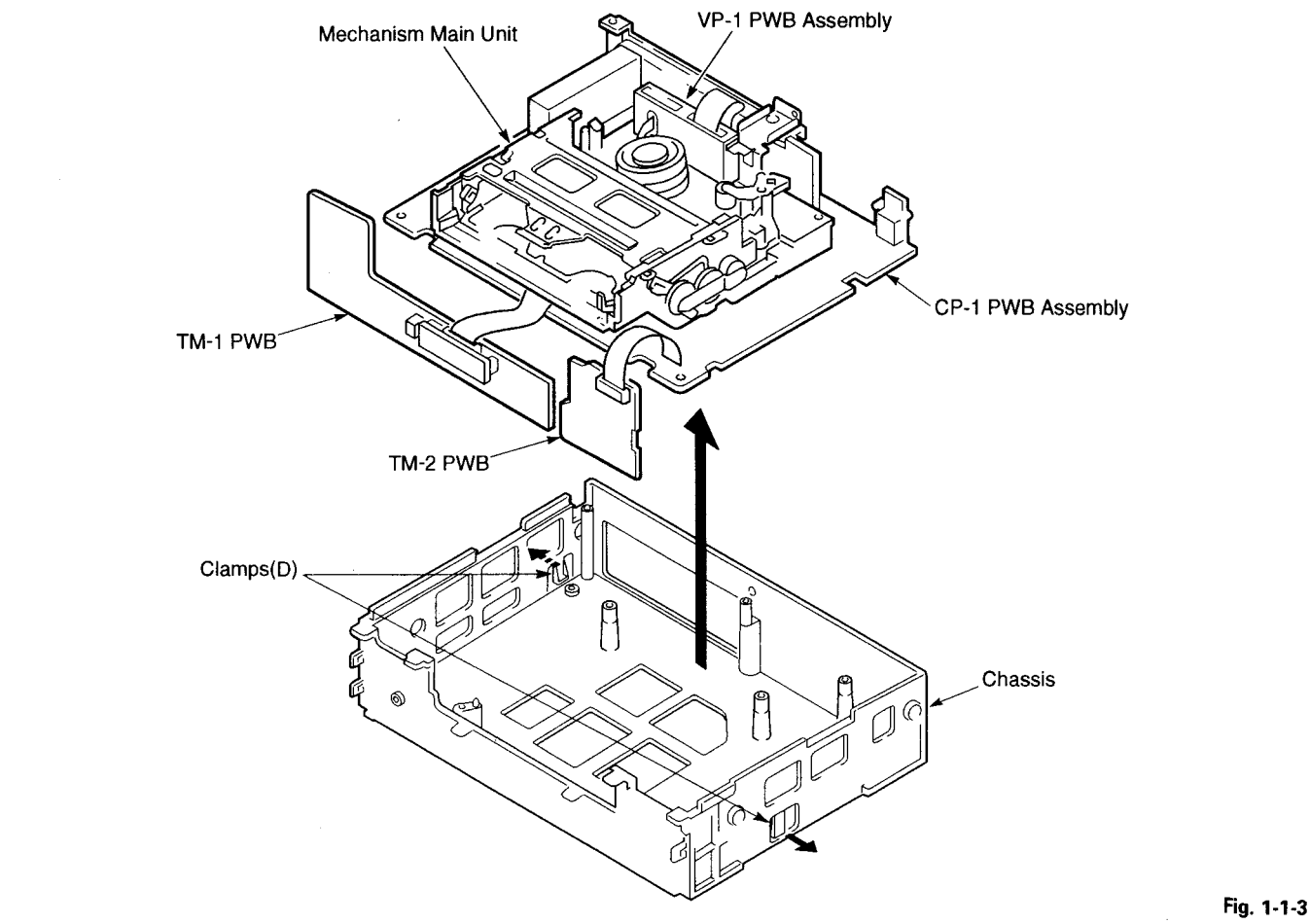


Fig. 1-1-3

1-2. TEMPORARILY SETTING UP AND CONNECTING CP-1 PWB ASSEMBLY

The following is an example of how to place and connect the main board without a jig, when repairing the CP-1 PWB assembly.

1. Place the mechanism unit and main board up side down as a whole on a flat surface with the foil side of the main board facing up.
2. Operate the unit using the buttons on TM-1 PWB or the remote control.

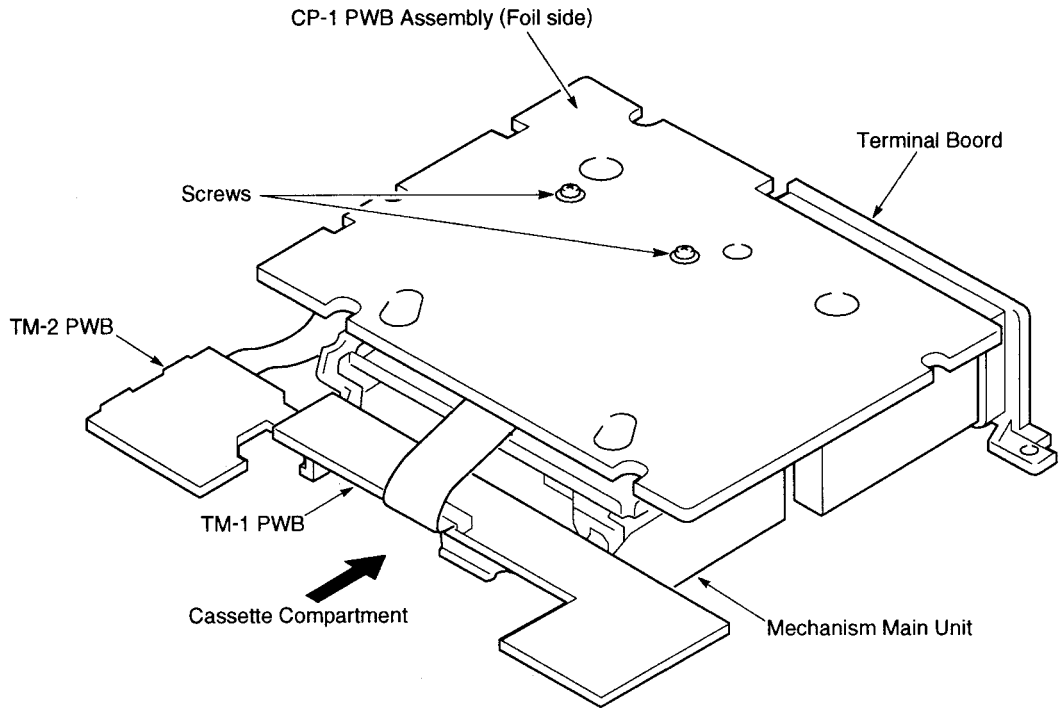


Fig. 1-1-4

1-3. INSTALLATION OF THE FRONT PANEL

When installing the front panel to the chassis after repaires and adjustments.

1. Pressing down the door opener lever of the mechanism main unit.
2. Set the cassette door to half-opened state as shown in Fig.1-1-5, and install the front panel to the chassis.

Note: Opened cassette door position does not install the front panel to the chassis.

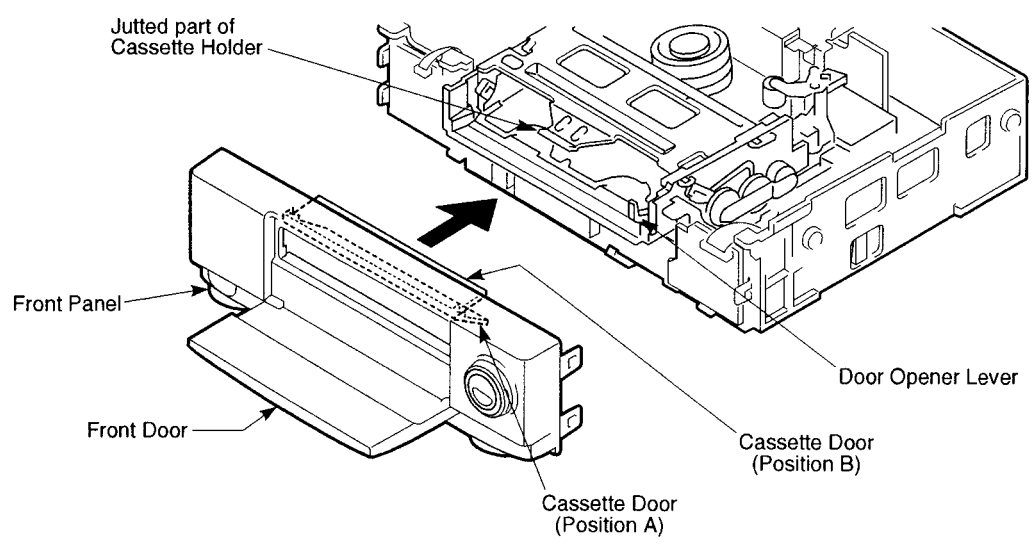
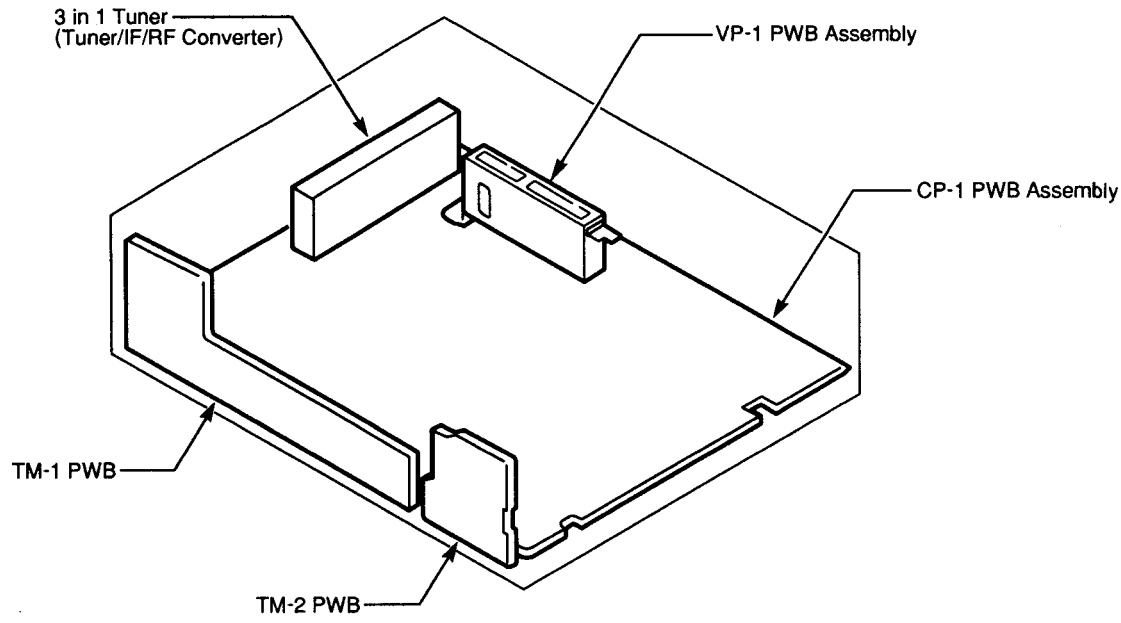


Fig. 1-1-5

SECTION 3
DIAGRAMS

CIRCUIT BOARDS LOCATION



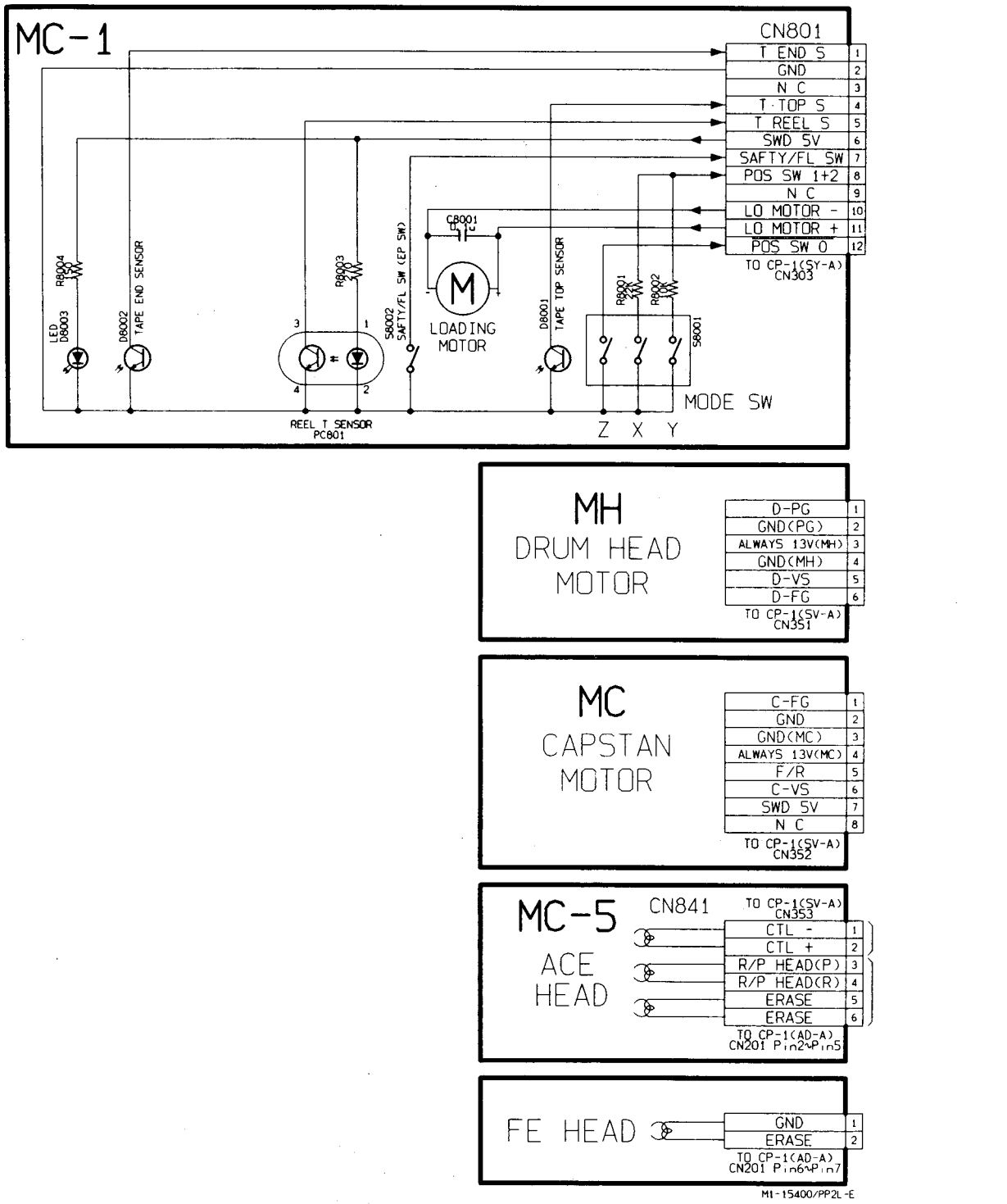
NOTES:

1. All resistance values in "OHMS" unless otherwise noted.
   (K=1,000 ; M=1,000,000)
2. All capacitance values in "μF" unless otherwise noted.
   p=pico farad ; μ,u or U=micro farad
3. All inductance values in "μH" unless otherwise noted.
   μ,u or U=micro henry ; m=milli henry

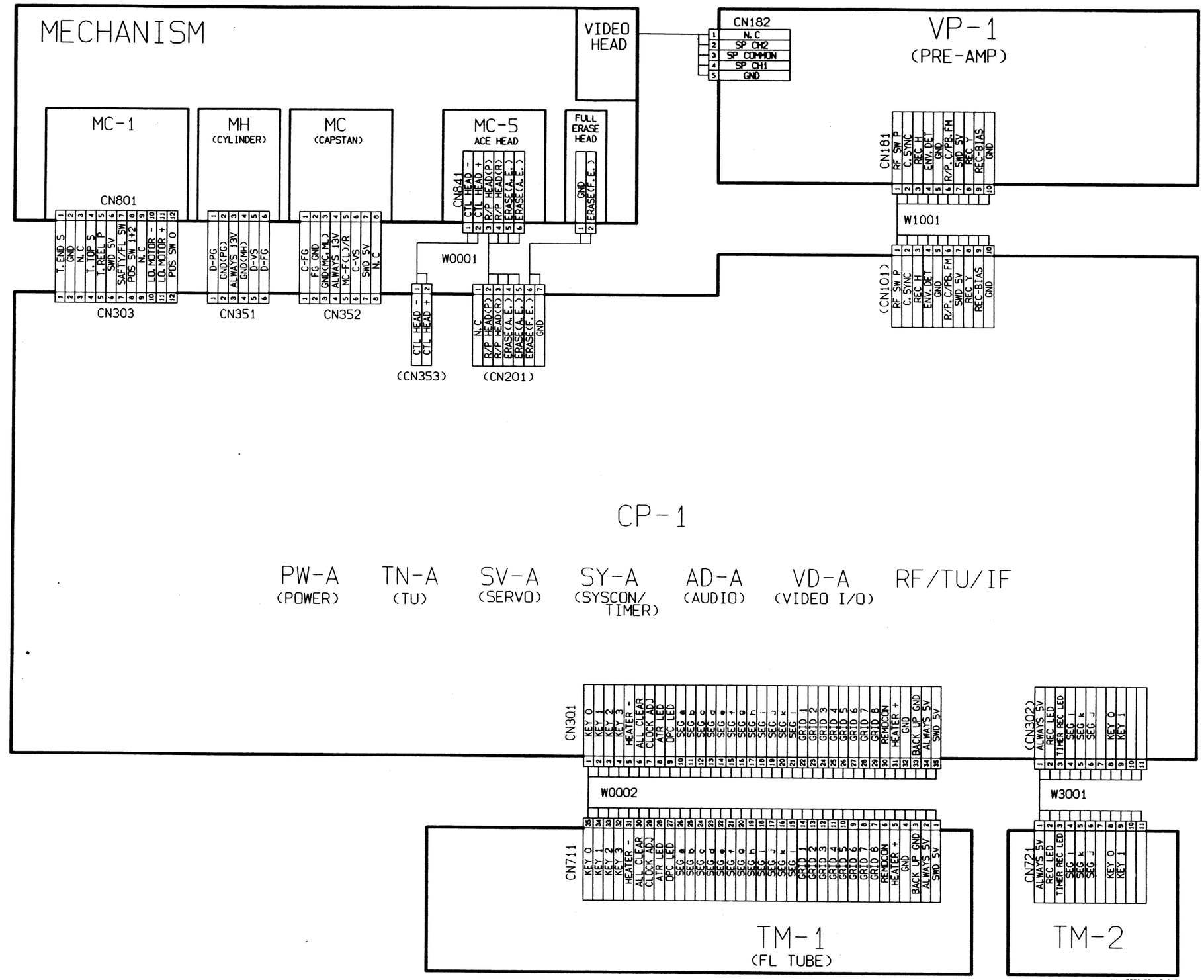
PRODUCT SAFETY NOTICE

THE COMPONENTS DESIGNATED BY A SYMBOL (⚠) IN THIS SCHEMATIC DIAGRAM DESIGNATES COMPONENTS WHOSE VALUE ARE OF SPECIAL SIGNIFICANCE TO PRODUCT SAFETY.
SHOULD ANY COMPONENT DESIGNATED BY A SYMBOL NEED TO BE REPLACED, USE ONLY THE PART DESIGNATED IN THE PARTS LIST.
DO NOT DEVIATE FROM THE RESISTANCE, WATTAGE AND VOLTAGE RATINGS SHOWN.

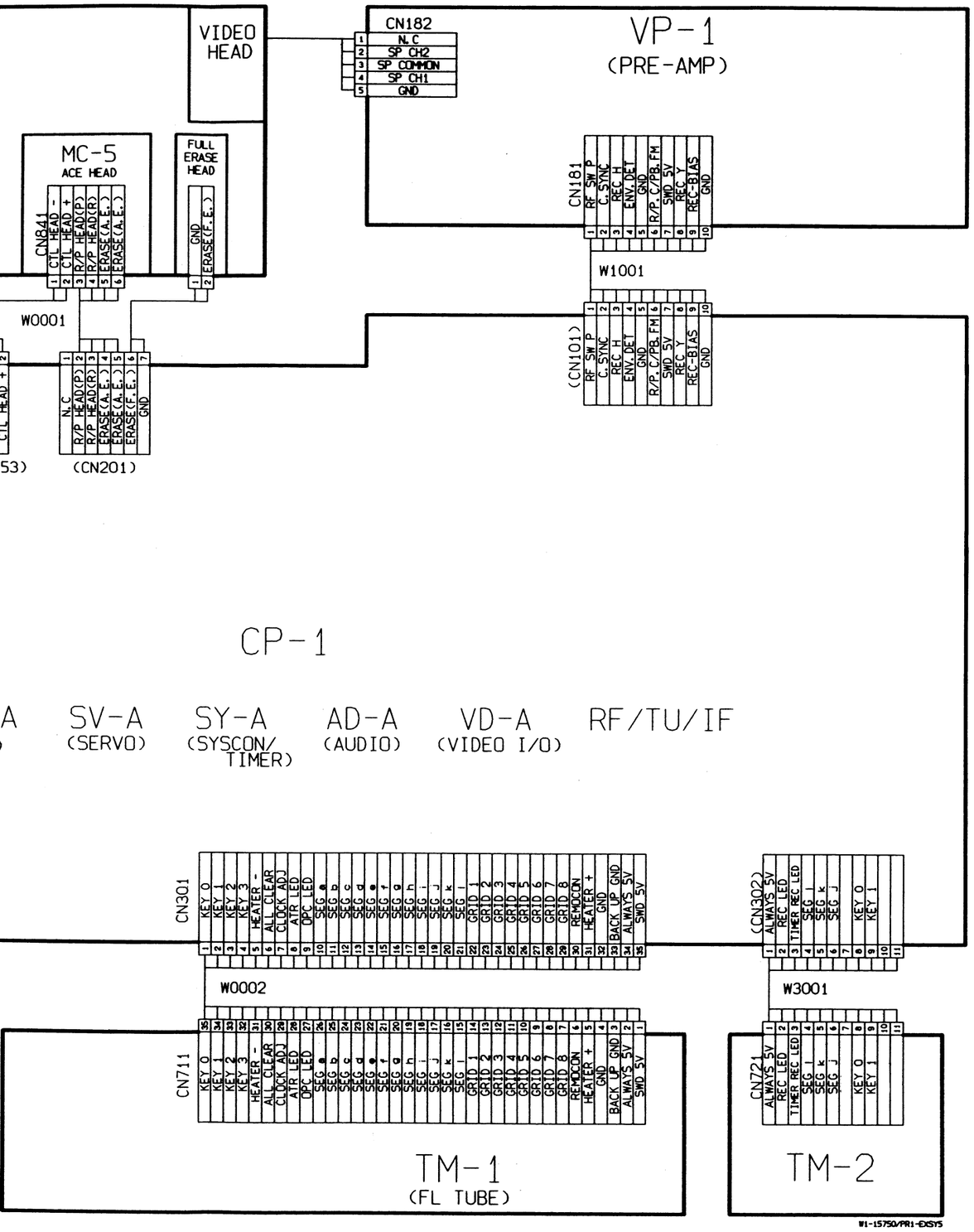
MECHANISM CONNECTION CIRCUIT DIAGRAM



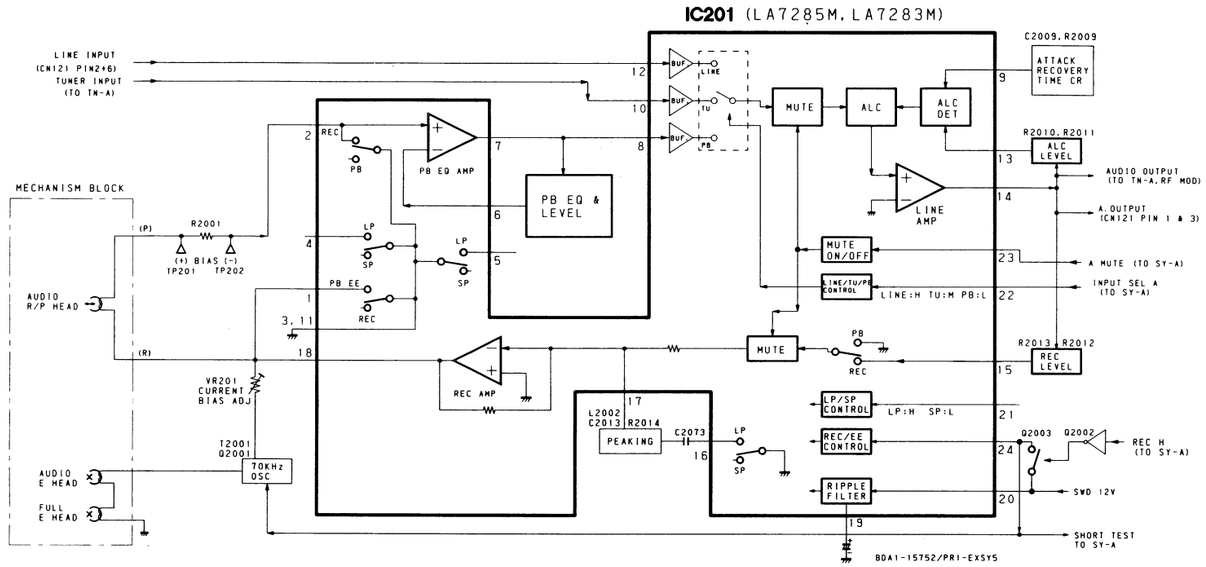
OVERALL WIRING DIAGRAM



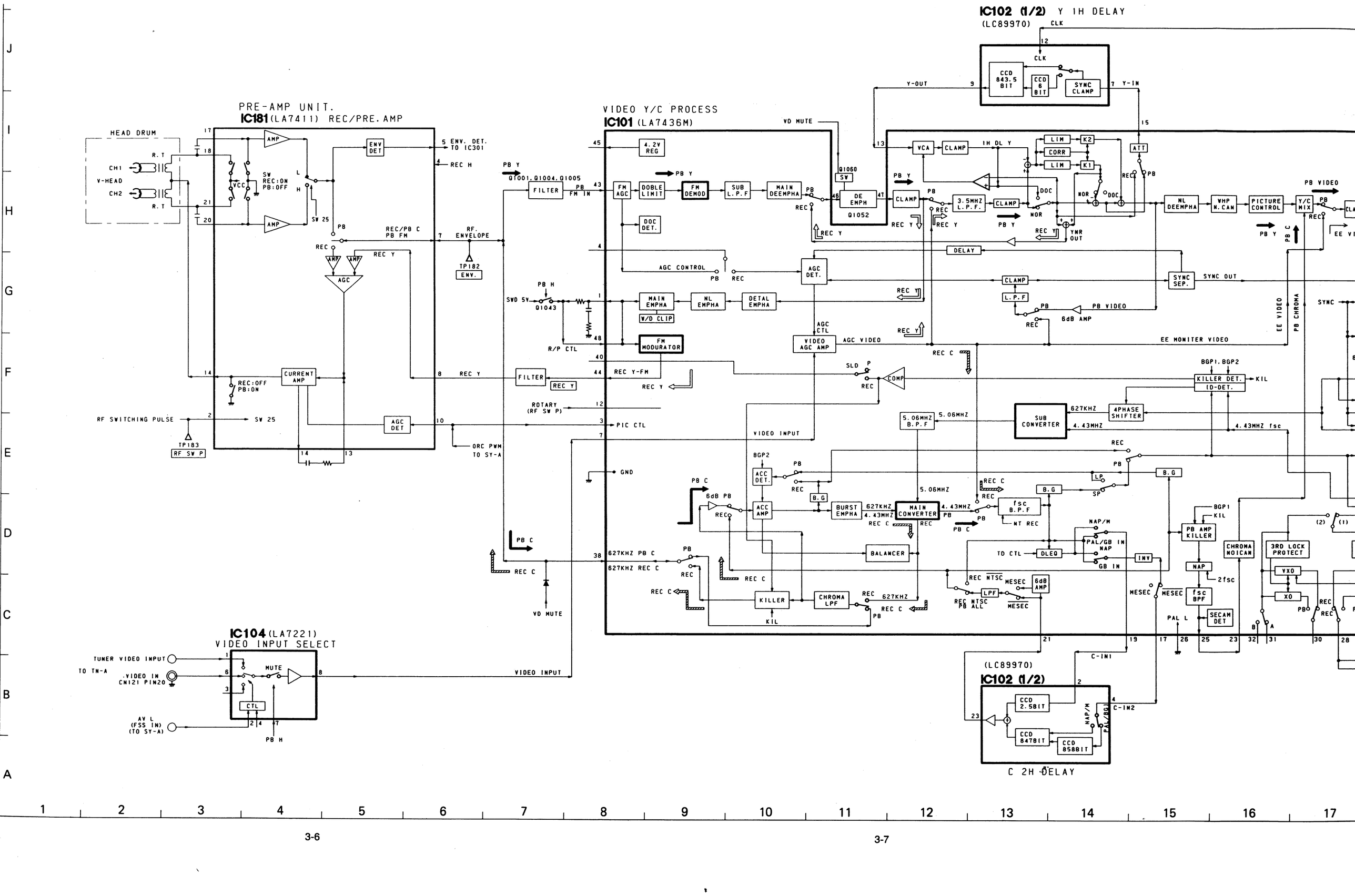
OVERALL WIRING DIAGRAM



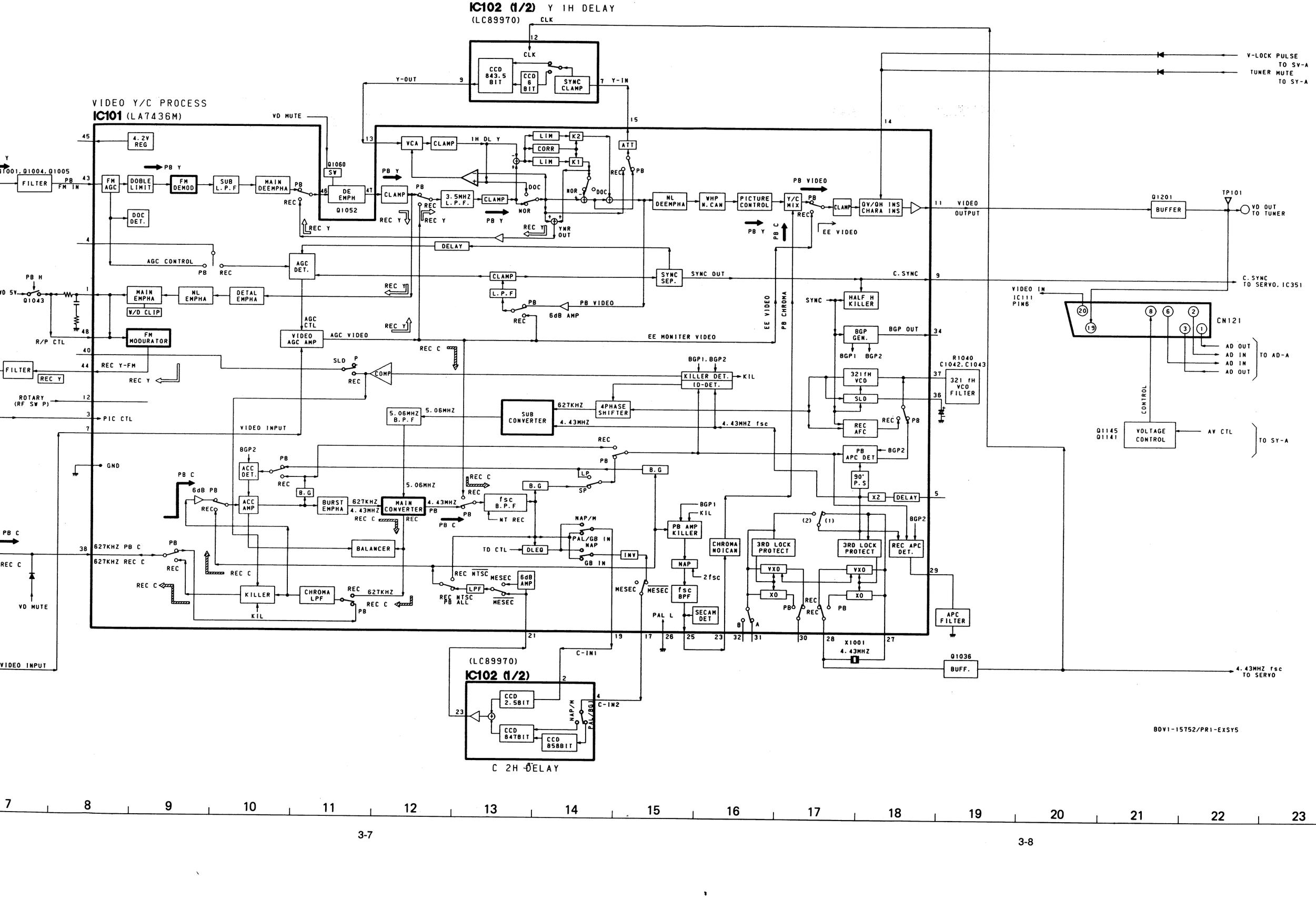
AUDIO CIRCUIT BASIC BLOCK DIAGRAM



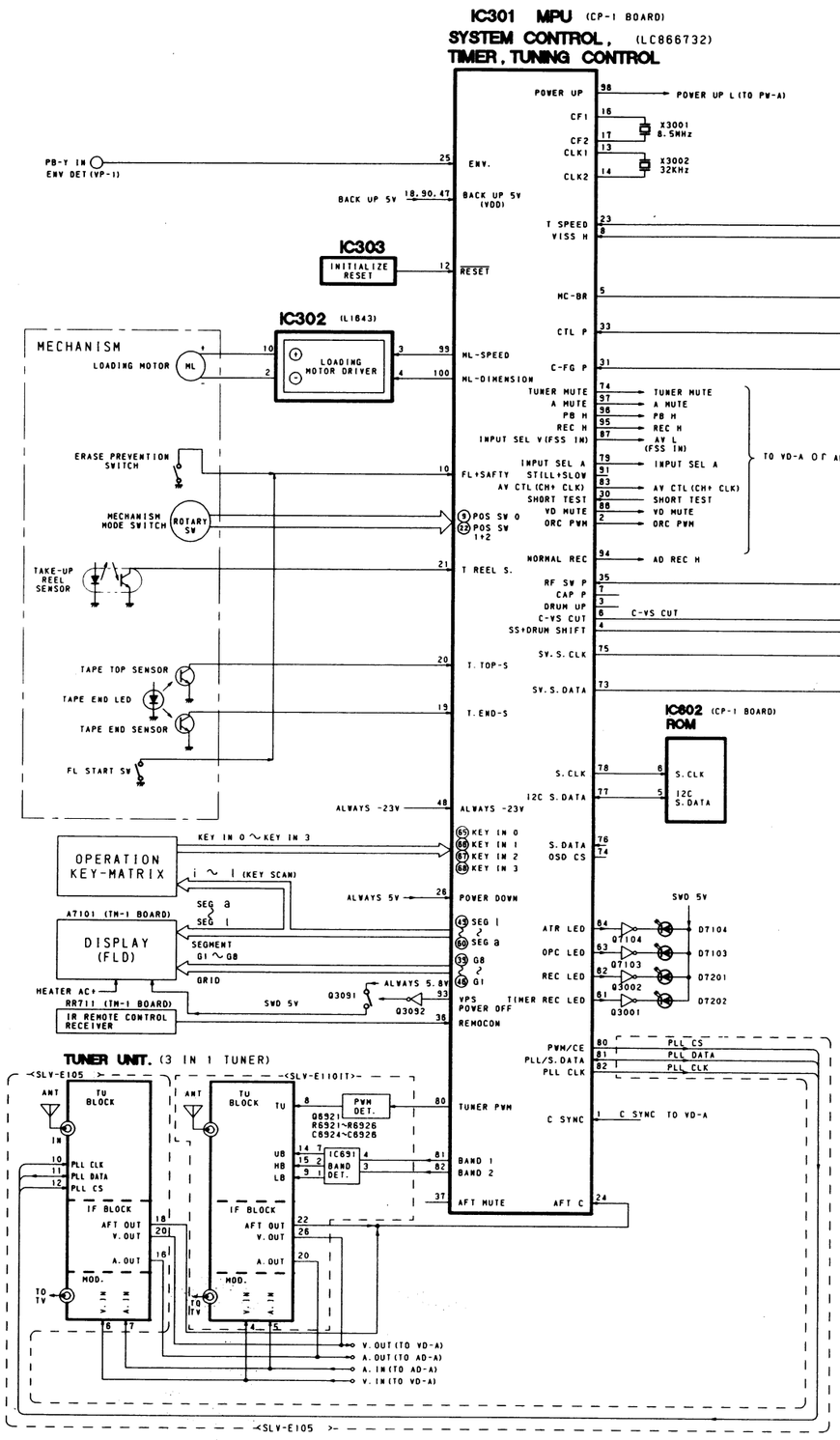
VIDEO CIRCUIT BASIC BLOCK DIAGRAM



VIDEO CIRCUIT BASIC BLOCK DIAGRAM



SYSTEM CONTROL & SERVO CIRCUIT BASIC BLOCK DIAGRAM



SYSTEM CONTROL & SERVO CIRCUIT BASIC BLOCK DIAGRAM

IC301 MPU (CP-1 BOARD)
TEM CONTROL, (LC866732)
ER, TUNING CONTROL

POWER UP 98 → POWER UP L (TO PW-A)
CF1 16 — X3001 8.5MHz — CF2 17
CLK1 13 — X3002 32KHz — CLK2 14
T SPEED 23
VISS H 8
MC-BR 5
CTL P 33
C-FG P 31
TUNER MUTE 74 → TUNER MUTE
A MUTE 97 → A MUTE
PB H 36 → PB H
REC H 35 → REC H
AV L (FSS IN) 87 → AV L (FSS IN)
INPUT SEL A 79 → INPUT SEL A
STILL+SLOW 91
AV CTL (CH+ CLK) 83 → AV CTL (CH+ CLK)
SHORT TEST 30 → SHORT TEST
VD MUTE 86 → VD MUTE
ORC PWM 2 → ORC PWM
TO VD-A OR AD-A
NORMAL REC 94 → AD REC H
RF SW P 35
CAP P 7
DRUM UP 3
C-VS CUT 6
SS+DRUM SHIFT 4
SV. S. CLK 75
SV. S. DATA 73
S. CLK 78 — 6 S. CLK
I2C S. DATA 77 — 5 I2C S. DATA
S. DATA 76
OSD CS 74
IC802 (CP-1 BOARD) ROM
SVD 5V
ATR LED 84 — Q7104 — D7104
OPC LED 63 — Q7103 — D7103
REC LED 62 — Q3002 — D7201
TIMER REC LED 61 — Q3001 — D7202
PWM/CE 80 → PLL CS
PLL/S. DATA 81 → PLL DATA
PLL CLK 82 → PLL CLK
C SYNC 1 → C SYNC TO VD-A
AFT C 24

D3502

IC351 DIGITAL SERVO (XLU/BU2899K)

MC-BR 16
CTL P 15
C-FG P 14
MC-F/R 13
V LOCK P 12
C. SYNC 11
10
RF SW P 9
D-PG M.M. 8
SV. S CLK 7
SV. S DATA 6
5
PORT 1 OUT 4
4.43MHZ FSC IN 3
VSS 2
GND (DIGITAL)
CFV OUT 1
CPV OUT 44
D-VDD 43
DFV OUT 42
DPV OUT 41
HEAD AMP SWITCHING 40
0/1 DATA 18
TAPE SPEED 19
VDD
BIAS (FG AMP) 20
REC CTL- 21
REC CTL+ 22
VDD → SWD 5V 23
A-GND 24
CTL AMP - 25
CTL AMP OUT 28
C-FG AMP OUT 27
C-FG IN 28
D-FG IN 29
D-PG IN 30
CAPSTAN-MIX OUT 31
CAP MIX- 32
CAP MIX+ 33
MIX OUT 34
DRM MIX- 35
DRM MIX+ 36
SLOW+STILL 37
38

MC-BR LOGIC
VP WIDTH
VP DELAY
H-PULSE GEN.
DIGITAL M.M.
SYNC SEP.
H-SYNC
V. SYNC
VP TIMING
SW P GEN.
D-PG M.M.
SERVO DATA DET.
MODE CONTROL
PORT 1
FSC AMP
CLOCK
C-FG COUNTER
1/M
CAPSTAN SPEED CONTROL ROM
CAPSTAN PHASE CONTROL ROM
CAP REF-COUNTER
TRIG
REC
ASB
L.P.F (D/A CONVERTER)
DRUM SPEED CONTROL ROM
DRUM PHASE CONTROL ROM
HEAD SWITCH LOGIC
1/2
CTL DUTY DET.
CTL DUTY
TAPE SPEED DET.
REC
PB
REC CTL
CTL REC AMP
F.F
F
R
CTL PB AMP
SYNC DISCRIMINATION
REF-COUNTER
CTL COUNTER
CTL R
CTL F
CTL AMP
AGC
CAPSTAN FG AMP
DRUM FG AMP
D-FG COUNTER
DRUM PG AMP
CAPSTAN MIX AMP
CAP MIX -
CAP MIX +
CTL DELAY
TRACKING DIGITAL M.M.
DRUM MIX AMP
DRUM MIX -
DRUM MIX +
MODE CONTROL (SLOW. STILL. DRUM CTL)
L.P.F D/A CONVERTER
L.P.F D/A CONVERTER
L.P.F D/A CONVERTER

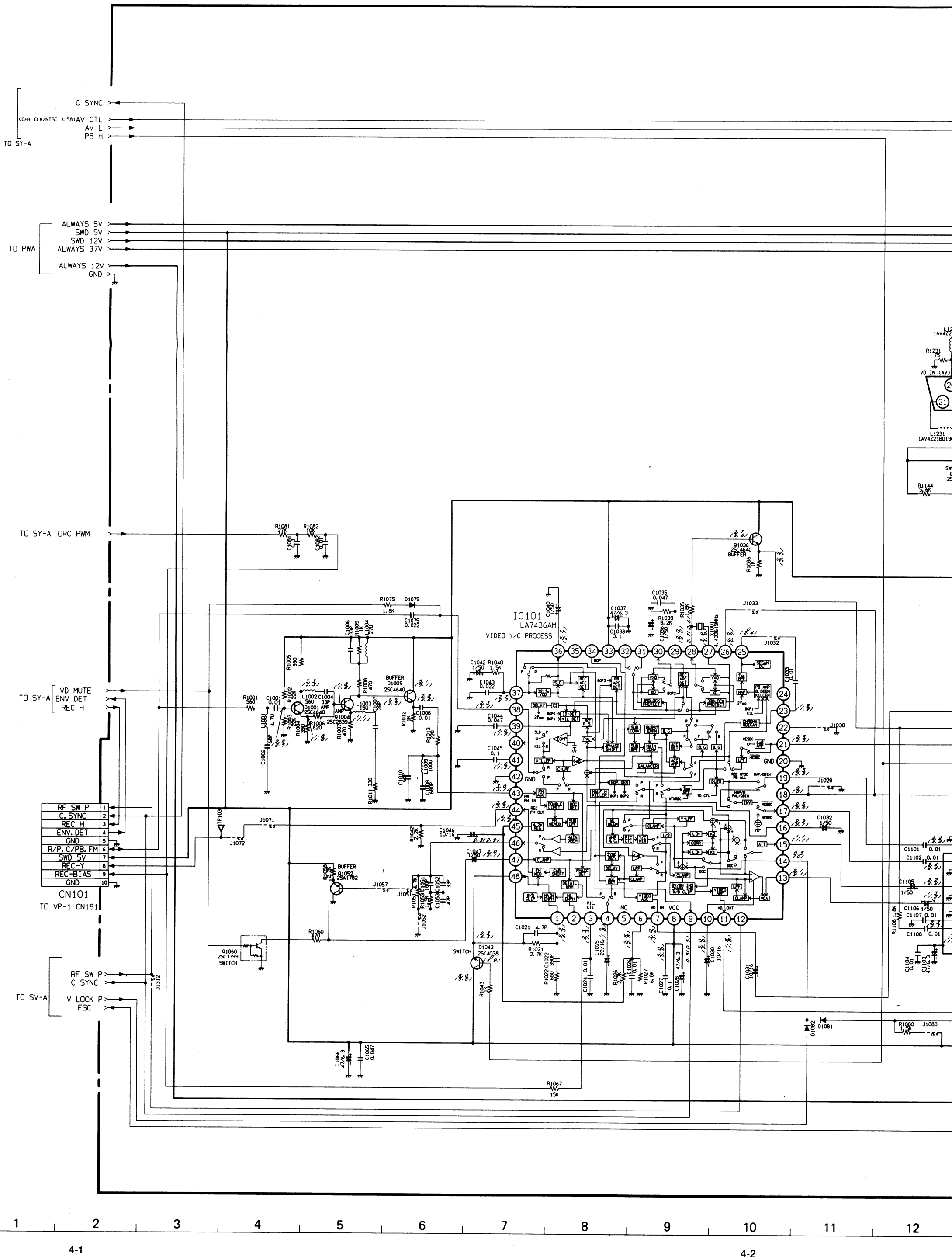
VR351 (SW MM) D-PG MM
SWD 5V (SWITCHING POSITION)
SV. S CLK
SV. S DATA
D-VDD → VDD (DIGITAL)

C SYNC
RF SW P
FSC (4.43) IN
V LOCK PULSE
TO VD-A
MC-FR
MC-BR
CTL HEAD
C-FG
CAPSTAN MOTOR
CAPSTAN-VS
Q3553 MOTIVE IMPROVEMENT
MECHANISM
D-FG
D-PG
HEAD DRUM MOTOR
Q3504
C3514 R3520 GAIN CONTROL
SLOW+STILL
C-VS CUT

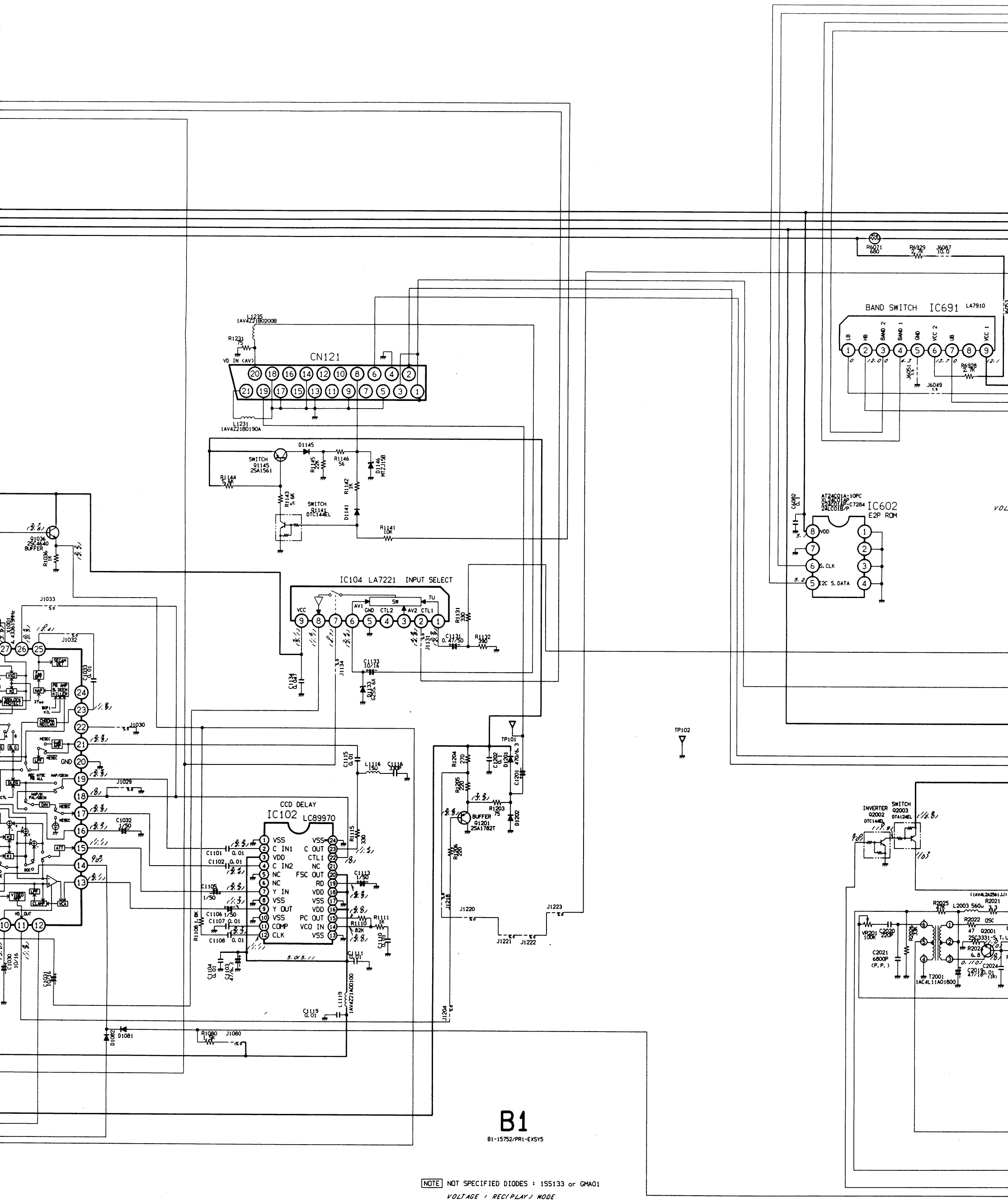
BDS1-15752/PR1-EXSY5

7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23

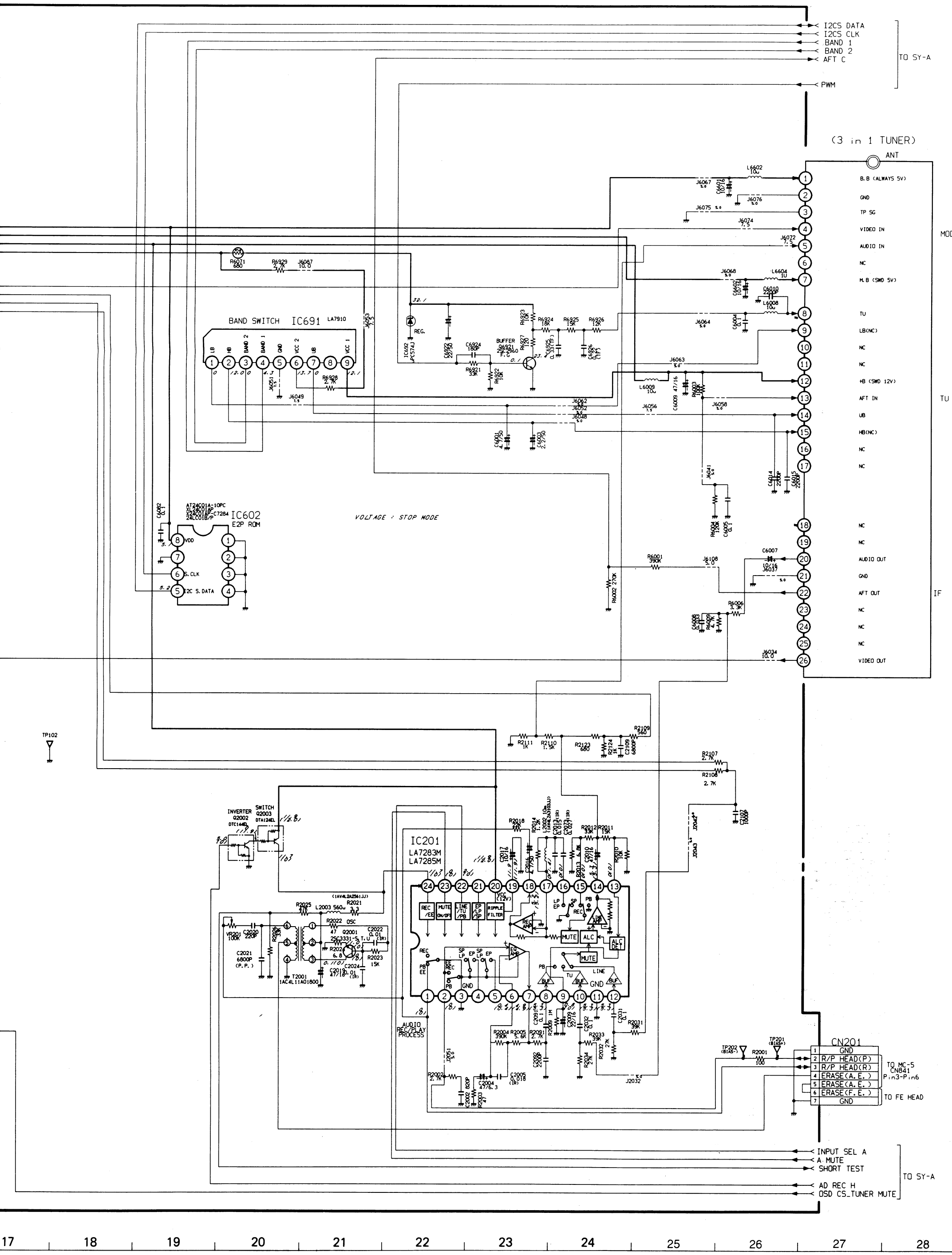
CP-1 BOARD (VD-A, AD-A



CP-1 BOARD (VD-A, AD-A & TN-A) VIDEO ,AUDIO & TUNER IF CONNECTION CIRCUIT DIAGRAM (SLV-E110IT)



GRAM (SLV-E110IT)



CP-1 BOA

C SYNC
(CH+ CLK/NTSC 3.58) AV CTL
AV L
PB H
TO SY-A

ALWAYS 5V
SWD 5V
SWD 12V
ALWAYS 37V
TO PWA
ALWAYS 12V
GND

TO SY-A ORC PWM

TO SY-A VD MUTE
ENV DET
REC H

RF SW P 1
C. SYNC 2
REC H 3
ENV. DET 4
GND 5
R/P. C/PB. FM 6
SWD 5V 7
REC-Y 8
REC-BIAS 9
GND 10
CN101
TO VP-1 CN181

TO SV-A RF SW P
C SYNC
V LOCK P
FSC
J1312

R1001 560
C1001 0.01
R1002 12K
L1002 56U
C1004 33P
Q1001 AMP 2SC4640
R1003 4.7K
R1004 2.2K
R1006 820
L1001 6.8P
C1002 4.7U
R1005 390
R1007 470
Q1004 2SC2839
L1003 100U
C1007 33
R1008 470
C1005 680P
R1009 1K
L1004 220
C1006 330P
BUFFER Q1005 2SC4640
R1012 1K
C1008 0.01
R1013 220
L1005 100U
C1009 680P
C1010 0.01
R1011 330
R1075 1.8K
D1075
C1075 0.022
R1081 1K
C1081 0.1
R1082 1K
C1082 0.1

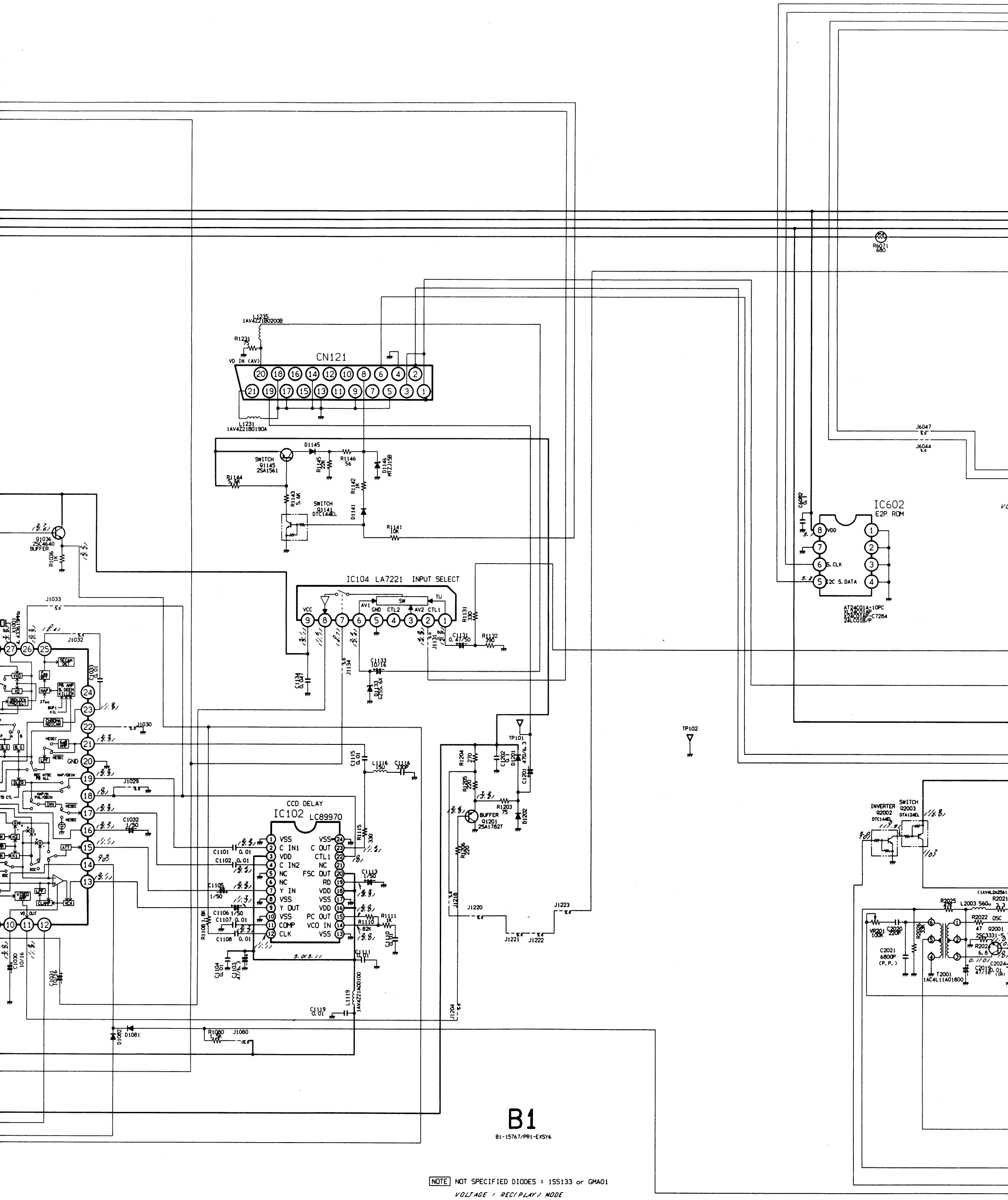
IC101
LA7436AM
VIDEO Y/C PROCESS

C1042 1/50
R1040 1.5K
C1043 0.022
C1044 0.047
C1045 0.1
C1040 1/50
C1037 47/6.3
C1038 0.1
C1035 0.047
R1039 6.2K
R1035 1.8K
C1036 1/50
X1001 4.433619MHz
Q1036 2SC4640 BUFFER
R1036 1K
J1033
J1032
J1030
J1029
C1032 1/50
C1033 0.01
C1034 0.01
C1105 1/50
C1106 1.8K
R1108 1.8K
GND
D1082
D1081
R1060 1K

J1071
J1072
TP103
R1042 2.2K
C1046 10/16
C1047 1/50
R1059 2.2K
Q1059 2SA1782 BUFFER
J1057
J1051
J1052
R1050 4.7K
R1051 10K
R1052 1.5K
C1053 1052
C1054 47P
R1060 470
Q1060 2SC3399 SWITCH
SWITCH Q1043 2SC4038
C1021 4.7P
R1021 2.7K
C1022 680
C1023 560
R1022 560
C1024 0.01
C1025 22/16
R1026 2.7K
C1026 0.01
R1027 6.8K
C1027 0.1
C1028 47/6.3
C1030 10/16
C1031 10/16
R1043
R1067 15K
C1066 47/6.3
C1065 0.047

1 C1
2 NC
3 PIC CTL
4 NC
5 NC
6 NC
7 VD IN
8 VCC
9 NC
10 NC
11 VD OUT
12 NC

CP-1 BOARD (VD-A, AD-A & TN-A) VIDEO ,AUDIO & TUNER IF CONNECTION CIRCUIT DIAGRAM (SLV-E105)



I2CS DATA
I2CS CLK
PLL DATA
PLL CLK
AFT C
PLL CS
TO SY-A

ANT
MOD.
TU
IF

1 B.B (ALWAYS 5V)
2 GND
3 TP SG
4 M.B (SWD 5V)
5 NC
6 VIDEO IN
7 AUDIO IN
8 PB 5V
9 BT 32V
10 CLOCK
11 DATA
12 ENABLE
13 GND
14 NC
15 +B (SWD 12V)
16 AUDIO OUT
17 GND
18 AFT OUT
19 NC
20 VIDEO OUT

IC602
E2P ROM
8 VDD
7
6 S. CLK
5 I2C S. DATA
1 2 3 4
AT24C01A-10PC
XL24C01AP
X24C01AP-C7284
24LC01B/P

VOLTAGE : STOP MODE

IC201
LA7283M
LA7285M
24 23 22 21 20 19 18 17 16 15 14 13
1 2 3 4 5 6 7 8 9 10 11 12
REC /EE
MUTE ON/OFF
LINE /TU /PB
EP LP SP
RIPPLE FILTER
VCC (12V)
GND
MUTE
ALC
ALC DET
LINE AMP
EQ AMP
BUF
AUDIO REC/PLAY PROCESS

INVERTER Q2002 DTC144EL
SWITCH Q2003 DTA124EL
T2001 1AC4L11A01800
25C3331-S

CN201
1 GND
2 R/P HEAD(P)
3 R/P HEAD(R)
4 ERASE(A.E.)
5 ERASE(A.E.)
6 ERASE(F.E.)
7 GND
TO MC-5 CN841 Pin3-Pin6
TO FE HEAD

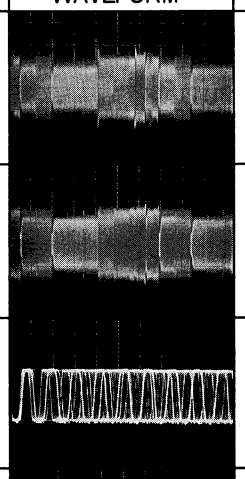
INPUT SEL A
A MUTE
SHORT TEST
AD REC H
OSD CS_TUNER MUTE
TO SY-A

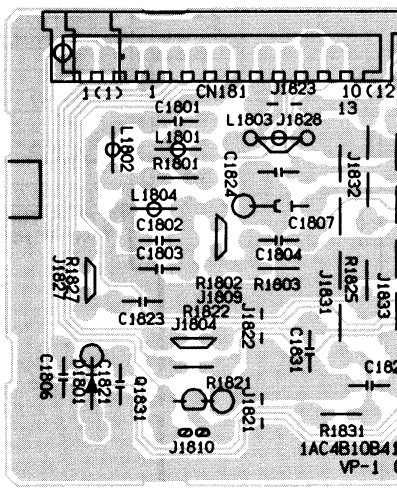
TP102
TP201 (BIAS+)
TP202 (BIAS-)

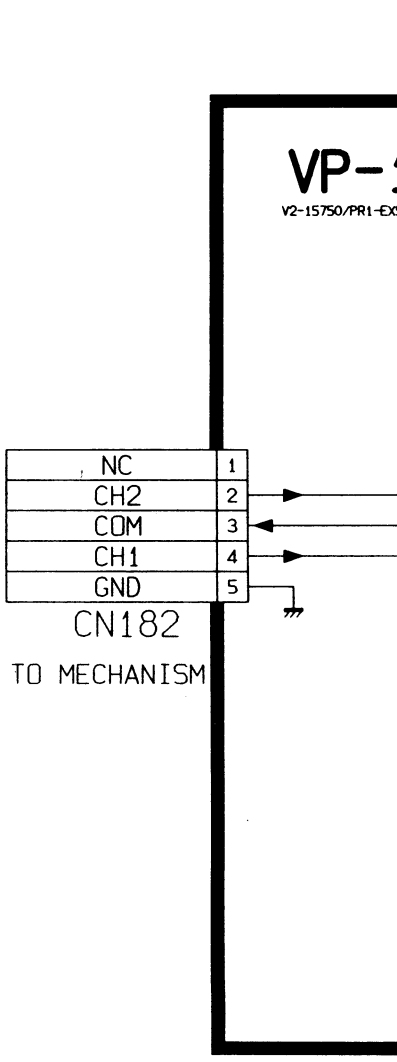
17 18 19 20 21 22 23 24 25 26 27 28

VIDEO CIRCUIT WAVEFORMS

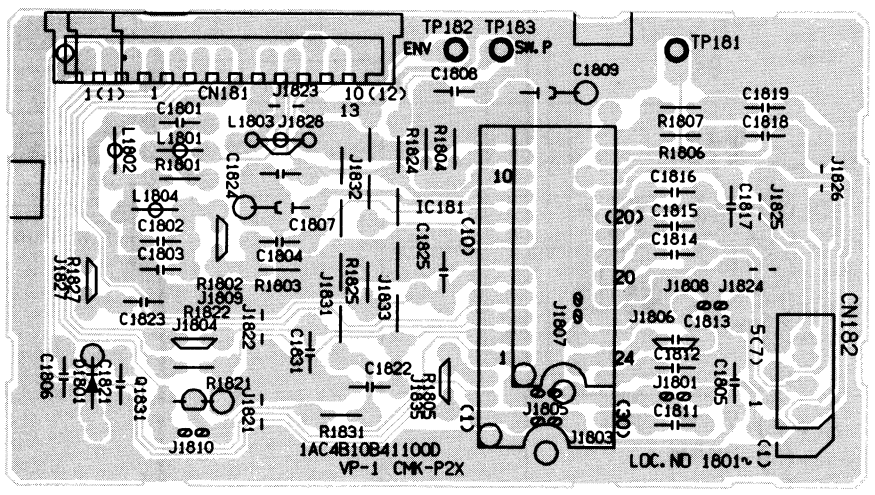
WF-V-TR

TEST LOCATION	WAVEFORM	MODE / LEVEL	TEST LOCATION	WAVEFORM	MODE / LEVEL
IC 101 Pin 1		REC, EE 0.5Vp-p	IC 101 Pin 38 (PB CHROMA IN)		PB 0.3Vp-p
IC 101 Pin 7 (VIDEO IN)		REC, EE 1.0Vp-p	IC 101 Pin 43 (PB FM IN)		PB 0.6Vp-p
IC 101 Pin 11 (VIDEO OUT)		REC, EE 2.0Vp-p	IC 101 Pin 44 TP103 (REC FM OUT)		REC 2.0Vp-p
IC 101 Pin 11 (VIDEO OUT)		PB 2.5Vp-p	IC 101 Pin 46		REC, EE 0.5Vp-p
IC 101 (UPPER) Pin 11 (LOWER) Pin 14		STILL (UPPER) 2.0Vp-p (LOWER) 5.0Vp-p	IC 101 Pin 46		PB 0.6Vp-p
IC 101 Pin 13 Pin 15		PB 0.4Vp-p	IC 101 Pin 47		REC, EE 0.5Vp-p
IC 101 Pin 17 Pin 19 Pin 21		PB 0.4Vp-p	IC 101 Pin 47		PB 0.6Vp-p
IC 101 Pin 38 (REC CHROMA OUT)		REC 0.4Vp-p			



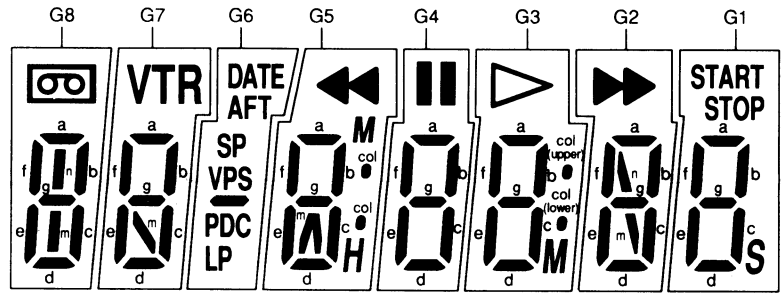


VP-1 P.W.B.



A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING

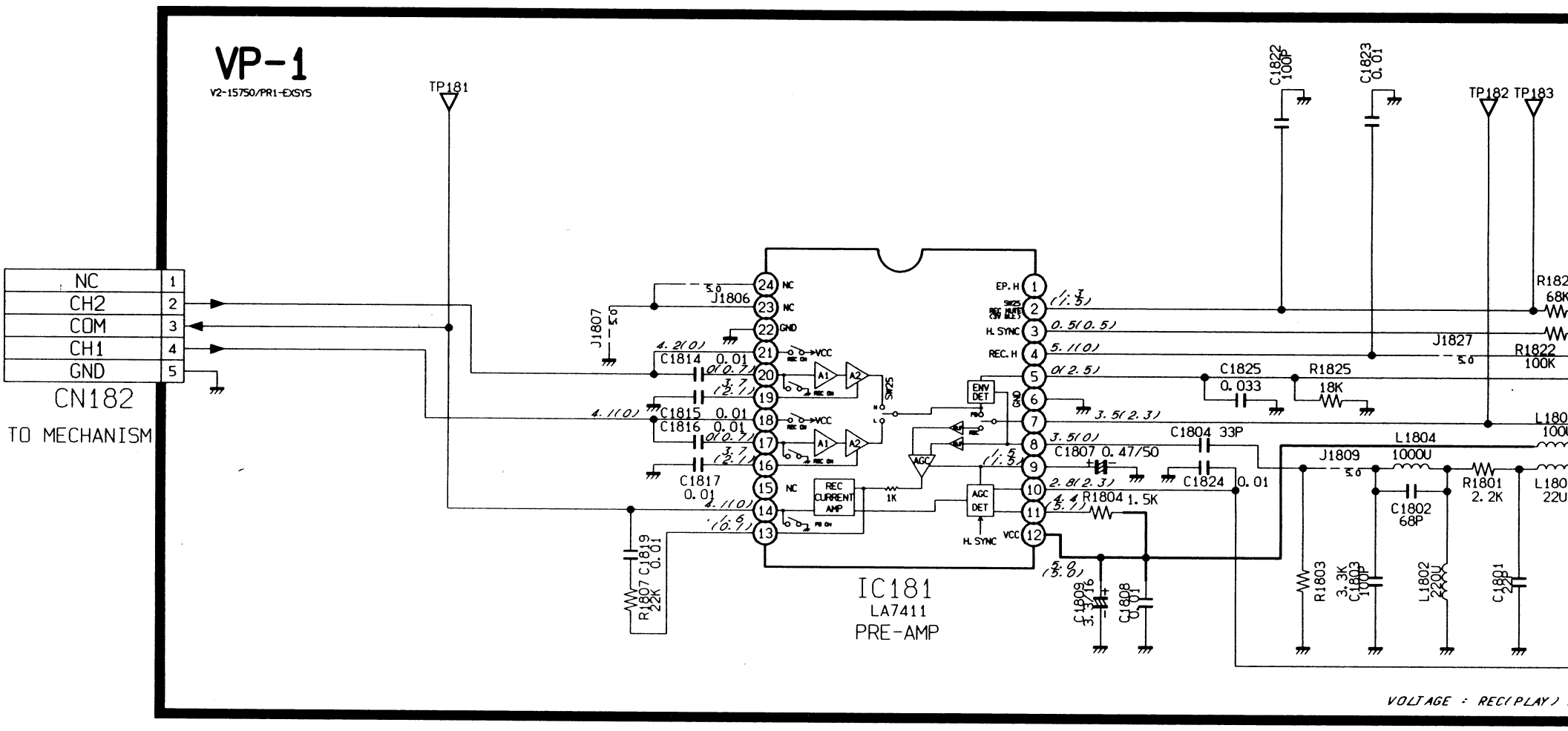
GRID & SEGMENT ASSIGNMENT



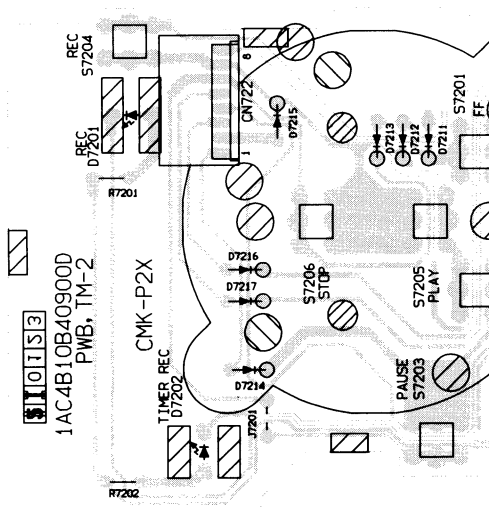
ANO

GRID / SEGMENT	G8	G7
a		VTR
b	—	—
c	a	a
d	b	b
e	c	c
f	d	d
g	e	e
h	f	f
i	g	g
j	m,n	m
k	—	—
l	—	—

VP-1 BOARD VIDEO PRE-AMP CIRCUIT DIAGRAM



TM-2 P.W.B.



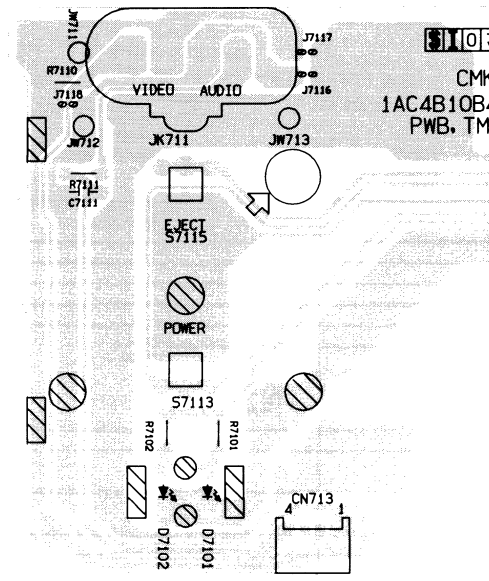
A7101 DISPLAY (FLD) GRID/ANODE ASSIGNMENT DRAWING & TABLE

GRID & SEGMENT ASSIGNMENT

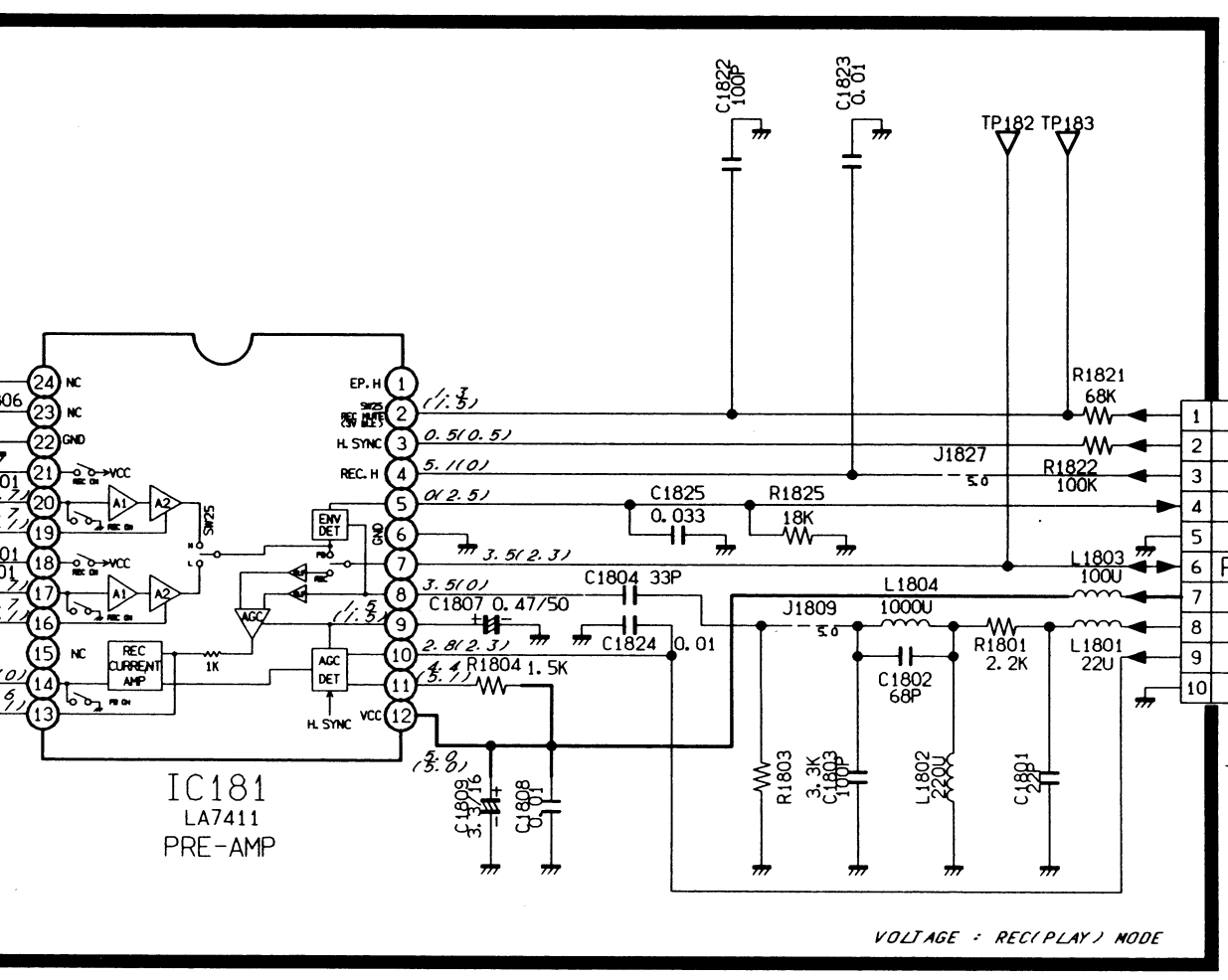
ANODE CONNECTION

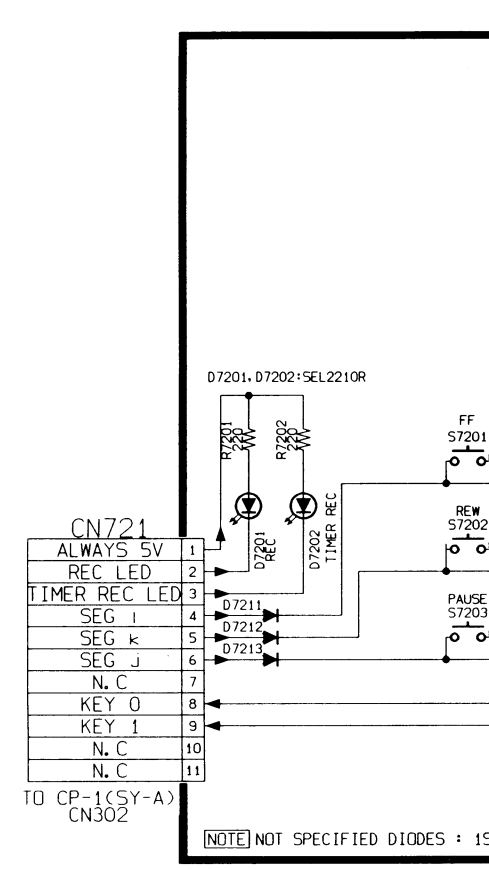
GRID / SEGMENT	G8	G7	G6	G5	G4	G3	G2	G1
a		VTR	DATE		(left)			START
b	—	—	AFT	*M*	(right)	—	—	STOP
c	a	a	SP	a	a	a	a	a
d	b	b	VPS	b	b	b	b	b
e	c	c	—	c	c	c	c	c
f	d	d	—	d	d	d	d	d
g	e	e	—	e	e	e	e	e
h	f	f	—	f	f	f	f	f
i	g	g	—	g	g	g	g	g
j	m,n	m	▬	m	—	col (upper)	m,n	—
k	—	—	PDC	col	—	col (lower)	—	—
l	—	—	LP	*H*	—	*M*	—	*S*

GR-01600

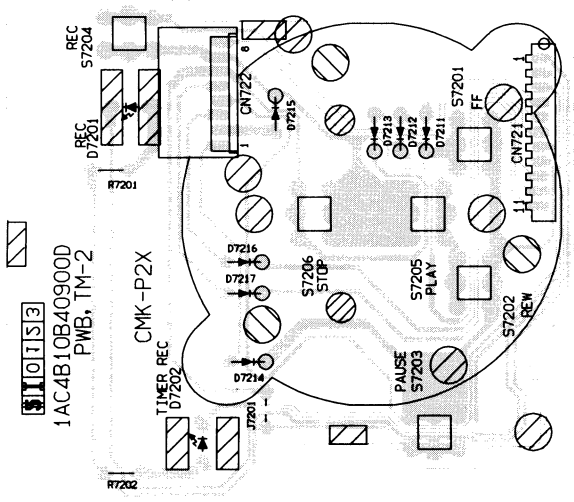


OARD VIDEO PRE-AMP CIRCUIT DIAGRAM



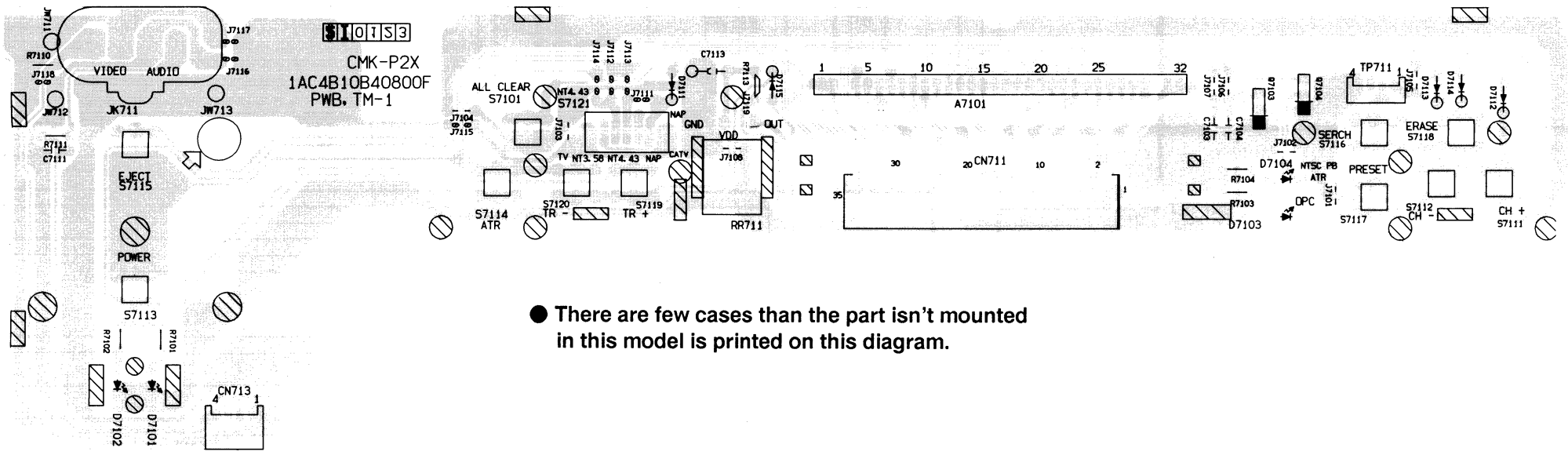


TM-2 P.W.B.



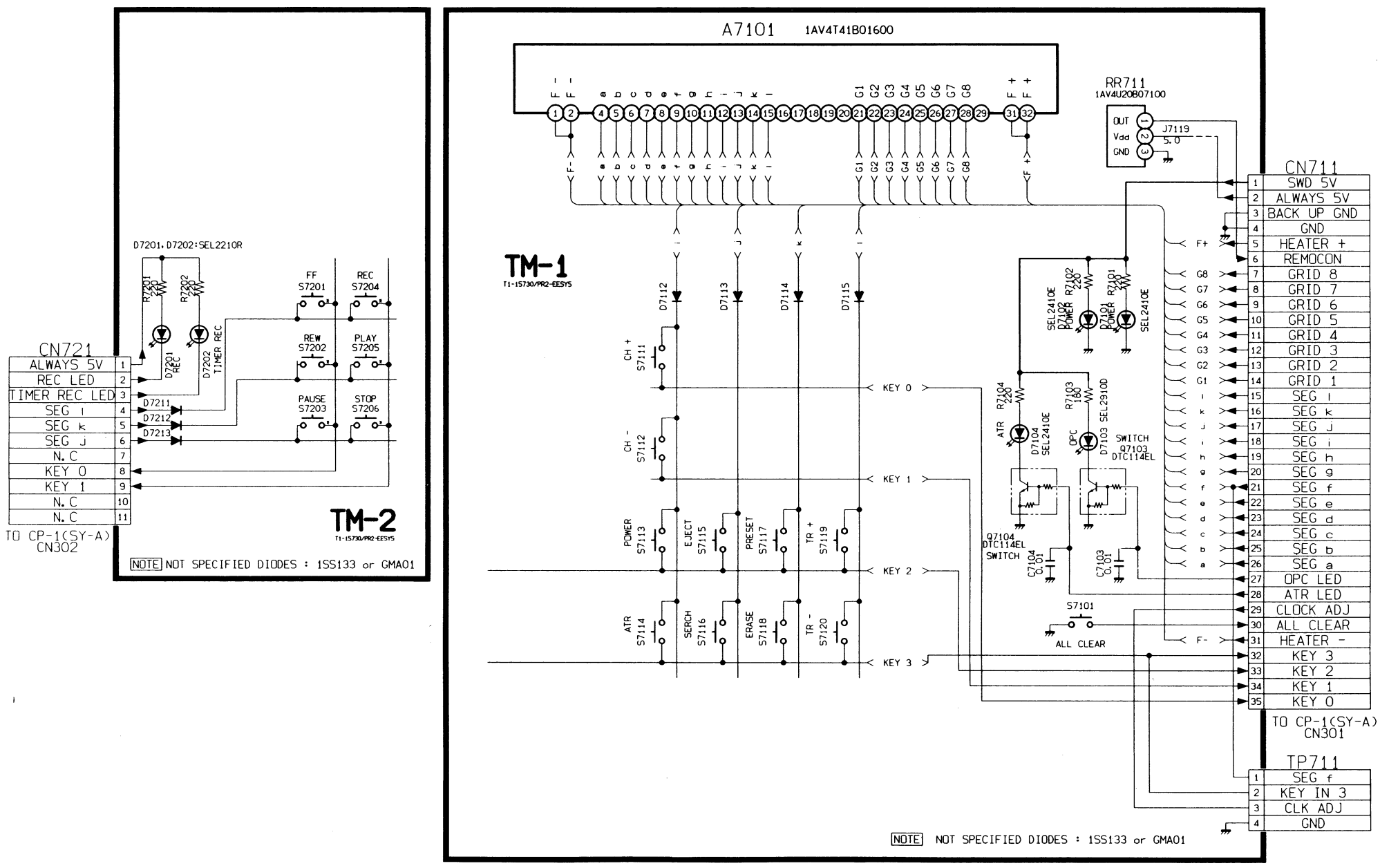
● There are few cases than the part isn't mounted in this model is printed on this diagram.

TM-1 P.W.B.



● There are few cases than the part isn't mounted in this model is printed on this diagram.

TM-1, 2 BOARD DISPLAY (FLD) & SWITCH CIRCUIT DIAGRAM



CP-1 BOAR

CN501 F5001 T2.5A H 250V

SWITCH Q5001 2SK1460

D5013 DCPC123U2

T5001

POWER CTL

VOLTAGE : S

TO VD-A

ENV DET <1>
C SYNC <2>
ORC PWM
OSD CS_TUNER MUTE
AV CTL <83> <85>
VD MUTE <86> <87>
AV L
REC H <95>
PB H <96> <71>

TO TN-A

*5
BAND2_PLL CLK
BAND1_PLL DATA
PWM_PLLCS
AFT C
I2CS DATA <77>
I2CS CLK <78>

LOADING MOTOR DRIVE

IC302 LB1643

IC303 MN1381L RESET

IC301

LC866732A

TUNING/TIMER/SYSTEM CONTROL

CN303

T END S	1	<19>
GND	2	
NC	3	
T TOP S	4	<20>
T REEL P	5	<21>
SWD 5V	6	
SAFETY/FL START	7	<10>
POS SW 1+2	8	<22>
NC	9	
LO. MOTOR -	10	
LO. MOTOR +	11	<9>
POS SW 0	12	

TO MC-1 CN801

CN301

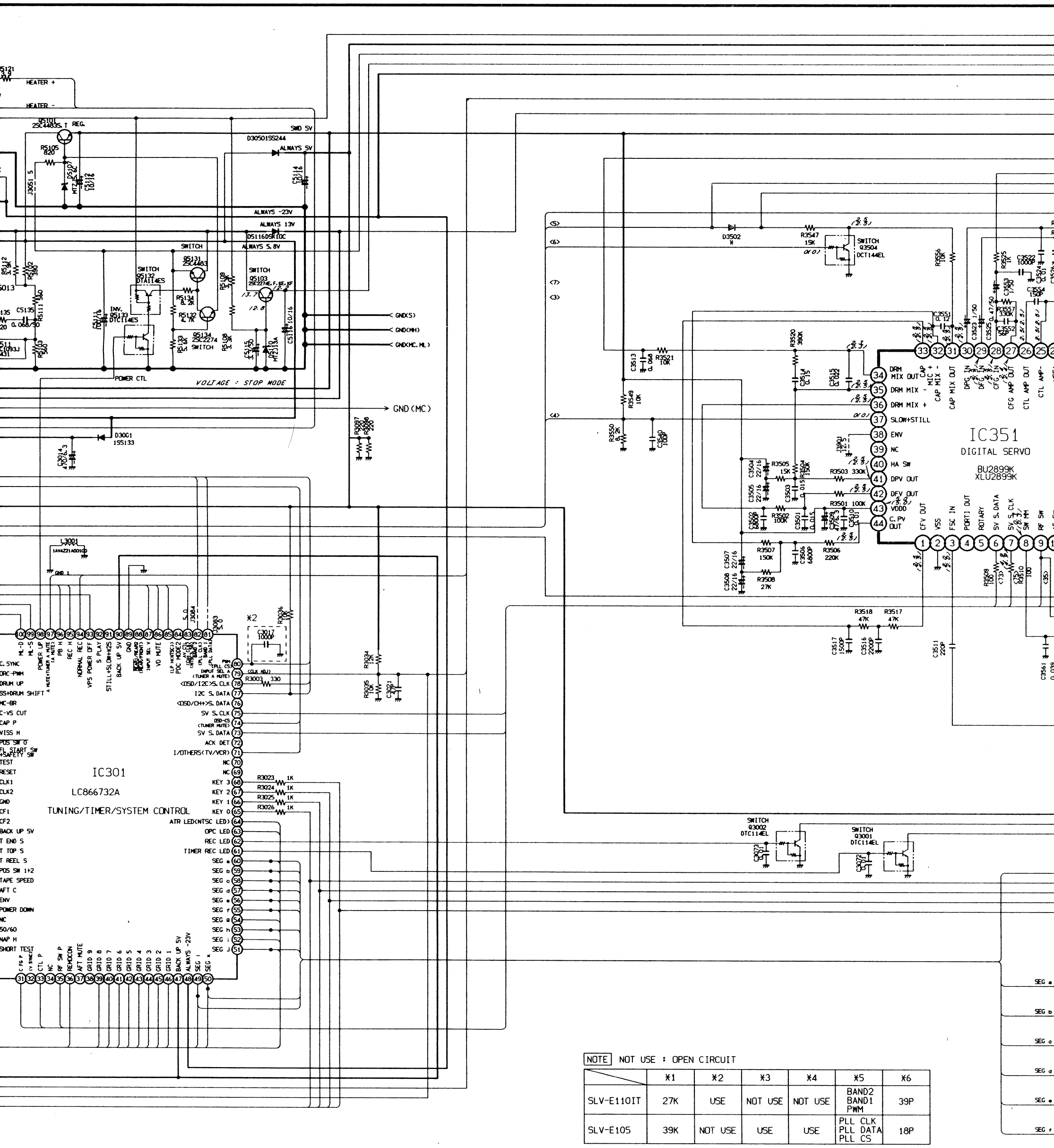
SWD 5V	35	
ALWAYS 5V	34	
BACK UP GND	33	
GND	32	
HEATER +	31	
REMOCON	30	<36>
GRID 8	29	<39>
GRID 7	28	<40>
GRID 6	27	<41>
GRID 5	26	<42>
GRID 4	25	<43>
GRID 3	24	<44>
GRID 2	23	<45>
GRID 1	22	<46>
SEG l	21	<49>
SEG k	20	<50>
SEG j	19	<51>
SEG i	18	<52>
SEG h	17	<53>
SEG g	16	<54>
SEG f	15	<55>
SEG e	14	<56>
SEG d	13	<57>
SEG c	12	<58>
SEG b	11	<59>
SEG a	10	<60>
OPC LED	9	<63>
ATR LED	8	<64>
CLOCK ADJ	7	
ALL CLEAR	6	
HEATER -	5	
KEY 3	4	
KEY 2	3	
KEY 1	2	
KEY 0	1	

TO TM-1 CN711

1	C. SYNC	80
2	ORC-PWM	79
3	DRUM UP	78
4	SS+DRUM SHIFT	77
5	MC-BR	76
6	C-VS CUT	75
7	CAP P	74
8	VISS H	73
9	POS SW 0	72
10	FL START SW +SAFETY SW	71
11	TEST	70
12	RESET	69
13	CLK1	68
14	CLK2	67
15	GND	66
16	CF1	65
17	CF2	64
18	BACK UP 5V	63
19	T END S	62
20	T TOP S	61
21	T REEL S	60
22	POS SW 1+2	59
23	TAPE SPEED	58
24	AFT C	57
25	ENV	56
26	POWER DOWN	55
27	NC	54
28	50/60	53
29	NAP H	52
30	SHORT TEST	51
31	C FG P	50
32	(V SYNC)	49
33	CTL P	48
34	NC	47
35	RF SW P	46
36	REMOCON	45
37	AFT MUTE	44
38	GRID 9	43
39	GRID 8	42
40	GRID 7	41
41	GRID 6	40
42	GRID 5	39
43	GRID 4	38
44	GRID 3	37
45	GRID 2	36
46	GRID 1	35
47	BACK UP 5V	34
48	ALWAYS -23V	33
49	SEG l	32
50	SEG k	31

51	SEG j	30
52	SEG i	29
53	SEG h	28
54	SEG g	27
55	SEG f	26
56	SEG e	25
57	SEG d	24
58	SEG c	23
59	SEG b	22
60	SEG a	21
61	TIMER REC LED	20
62	REC LED	19
63	OPC LED	18
64	ATR LED(NTSC LED)	17
65	KEY 0	16
66	KEY 1	15
67	KEY 2	14
68	KEY 3	13
69	NC	12
70	NC	11
71	I/OTHERS(TV/VCR)	10
72	ACK DET	9
73	5V S. DATA	8
74	OSD-CS (TUNER MUTE)	7
75	5V S. CLK	6
76	<OSD/CH+>S. DATA	5
77	I2C S. DATA	4
78	<OSD/I2C>S. CLK	3
79	INPUT SEL A (TUNER A MUTE)	2
80	PWM (PLL CS)	1

CP-1 BOARD (SY-A, SV-A & PW-A) SYSTEM CONTROL, SERVO & POWER SUPPLY CIRCUIT DIAGRAM

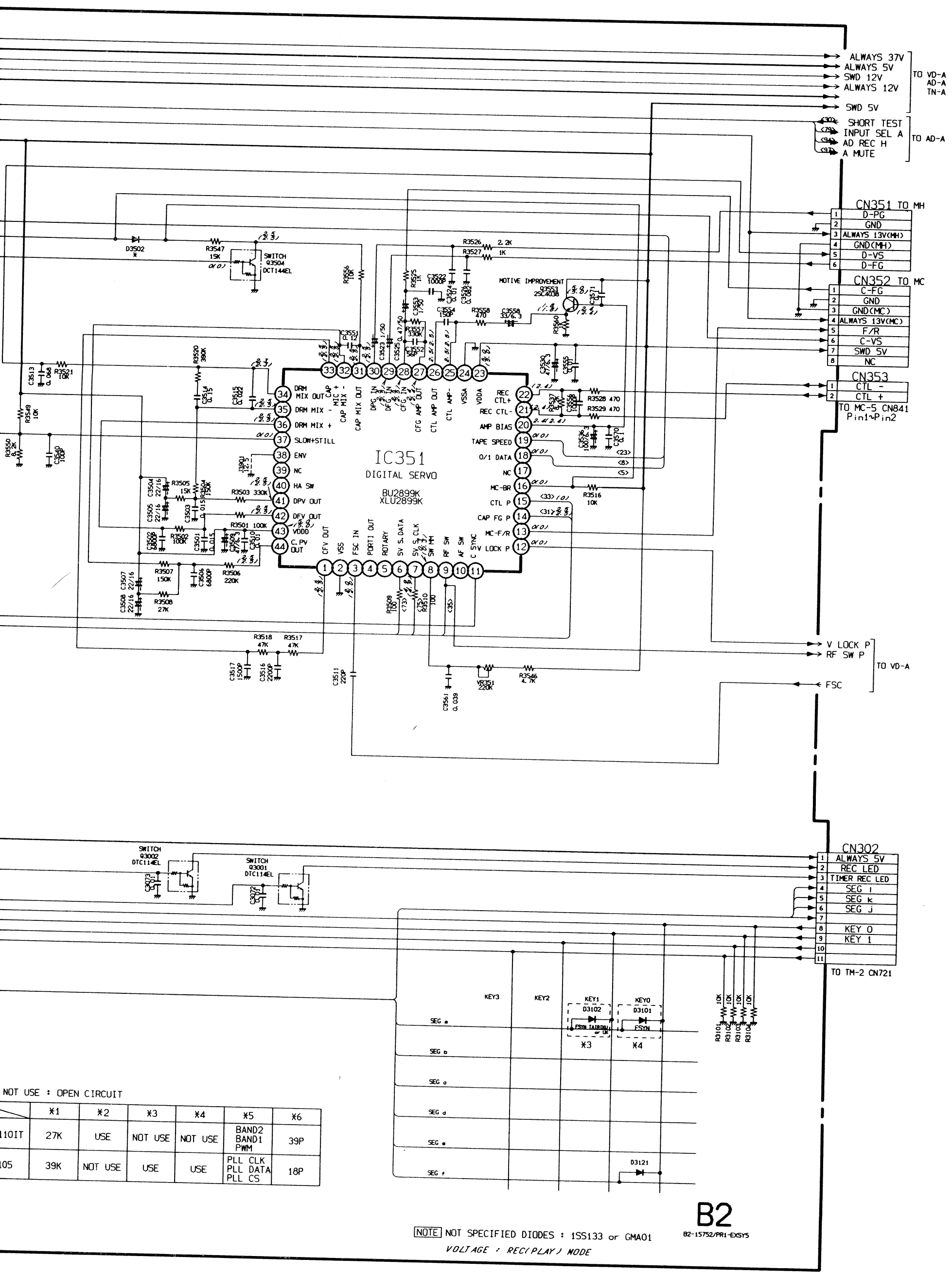


NOTE NOT USE : OPEN CIRCUIT

	※1	※2	※3	※4	※5	※6
SLV-E110IT	27K	USE	NOT USE	NOT USE	BAND2 BAND1 PWM	39P
SLV-E105	39K	NOT USE	USE	USE	PLL CLK PLL DATA PLL CS	18P

NOTE

WER SUPPLY CIRCUIT DIAGRAM



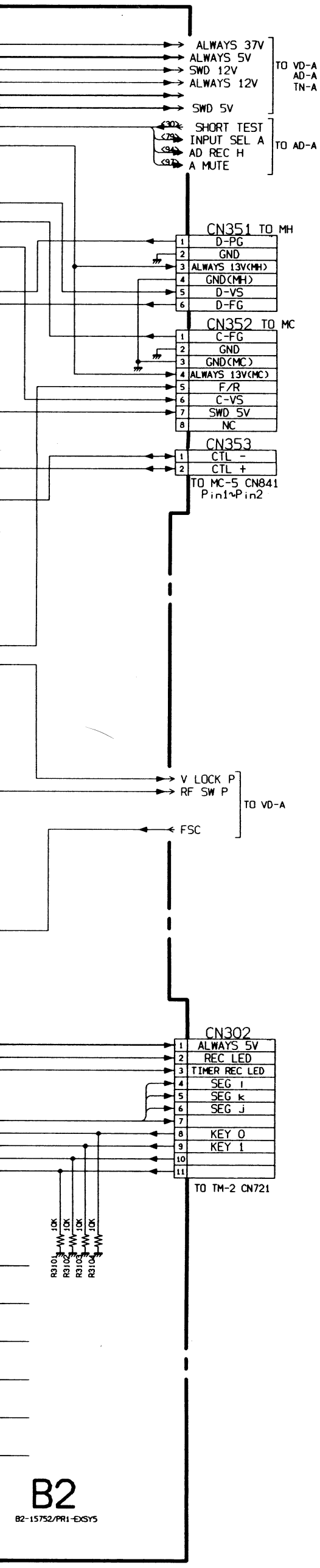
NOT USE : OPEN CIRCUIT

	※1	※2	※3	※4	※5	※6
110IT	27K	USE	NOT USE	NOT USE	BAND2 BAND1 PWM	39P
105	39K	NOT USE	USE	USE	PLL CLK PLL DATA PLL CS	18P

NOTE NOT SPECIFIED DIODES : 1SS133 or GMA01

VOLTAGE : REC(PLAY) MODE

17 18 19 20 21 22 23 24 25 26 27 28



SERVO CIRCUIT WAVEFORMS (IC351:XLU2899 Series)

TEST LOCATION	WAVEFORM & MODE/LEVEL	TEST LOCATION	WAVEFORM & MODE/LEVEL
Pin 40 (H. A. SWITCHING)	SLOW PB 5.0V, 20msec 20msec	**Pin 15** (CTL PULSE)	REC 5.0V, 24msec 16msec
Pin 42 (PWM)	5.0V, 8.66KHz	**Pin 15** (CTL PULSE)	PB 850µsec, 5.0V, 40msec
Pin 41, 44, 1 (PWM)	5.0V, 69.27KHz	**Pin 21** (CTL HEAD-)	REC 3.6V, 1.4V, 24msec 16msec
Pin 3 (FSC INPUT)	0.3V, 4.43MHz	**Pin 22** (CTL HEAD+)	REC 1.4V, 3.6V, 24msec 16msec
Pin 5 (ROTARY)	PB 5.0V, 20msec 20msec	**Pin 26** (CTL AMP OUT)	PB 2.0V, 40msec
Pin 8 (D-PG MM)	2msec, 2.5V, 7msec	**Pin 28** (C-FG INPUT)	10mV, 1.32msec
Pin 9 (RF SW PULSE)	5.0V, 20msec 20msec	**Pin 29** (D-FG INPUT)	30mV, 1.33msec
Pin 10 (AF SW PULSE)	PB 5.0V, 20msec 20msec	**Pin 30** (D-PG INPUT)	250mV, 40msec
Pin 11 (COMPOSITE SYNC INPUT)	4.2V, T=20msec	**Pin 38** (ENV. SW INPUT)	SLOW PB 4.0V, 20msec 20msec
Pin 14 (C-FG PULSE)	5.0V, 756.5Hz		

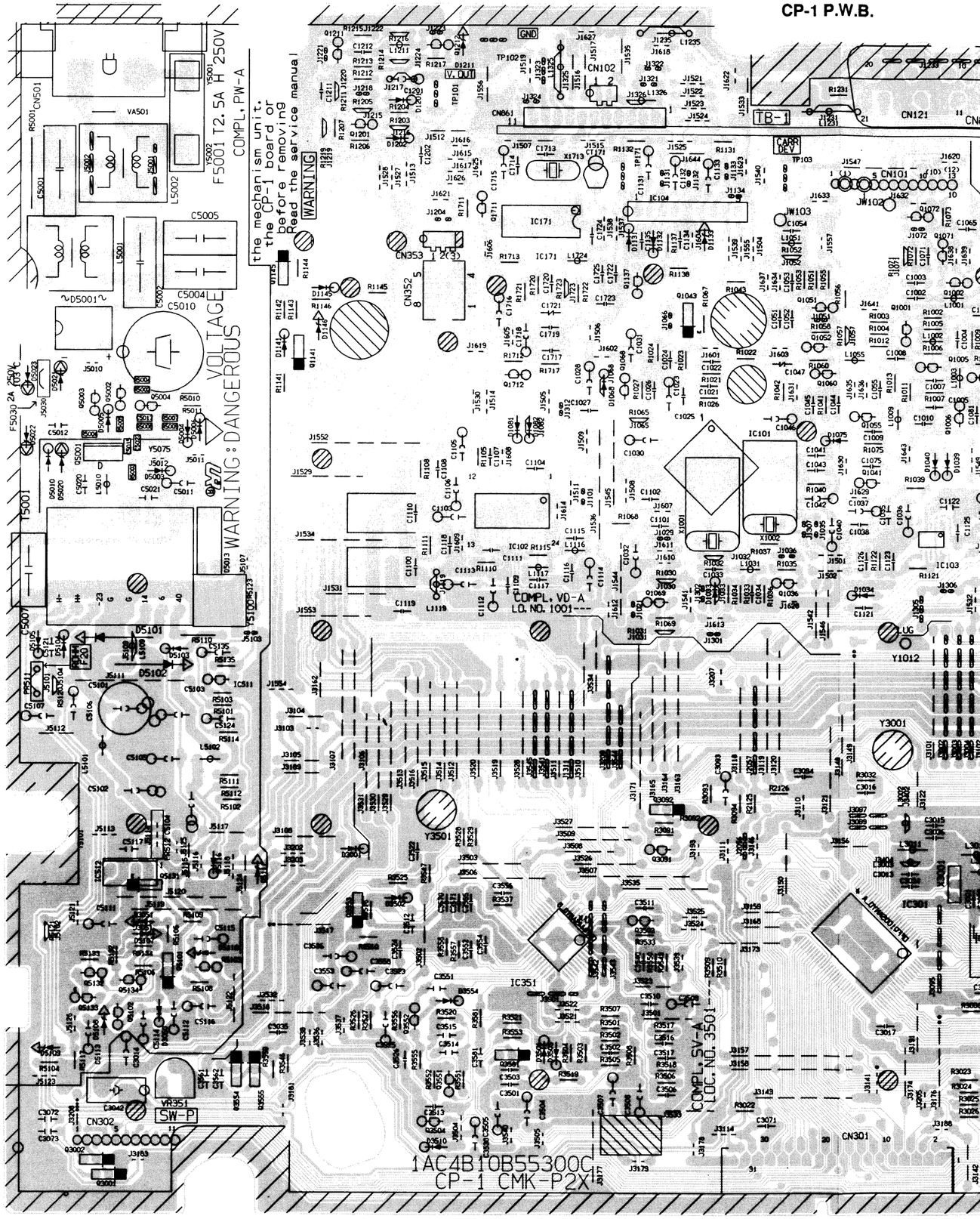
WF-S-PP

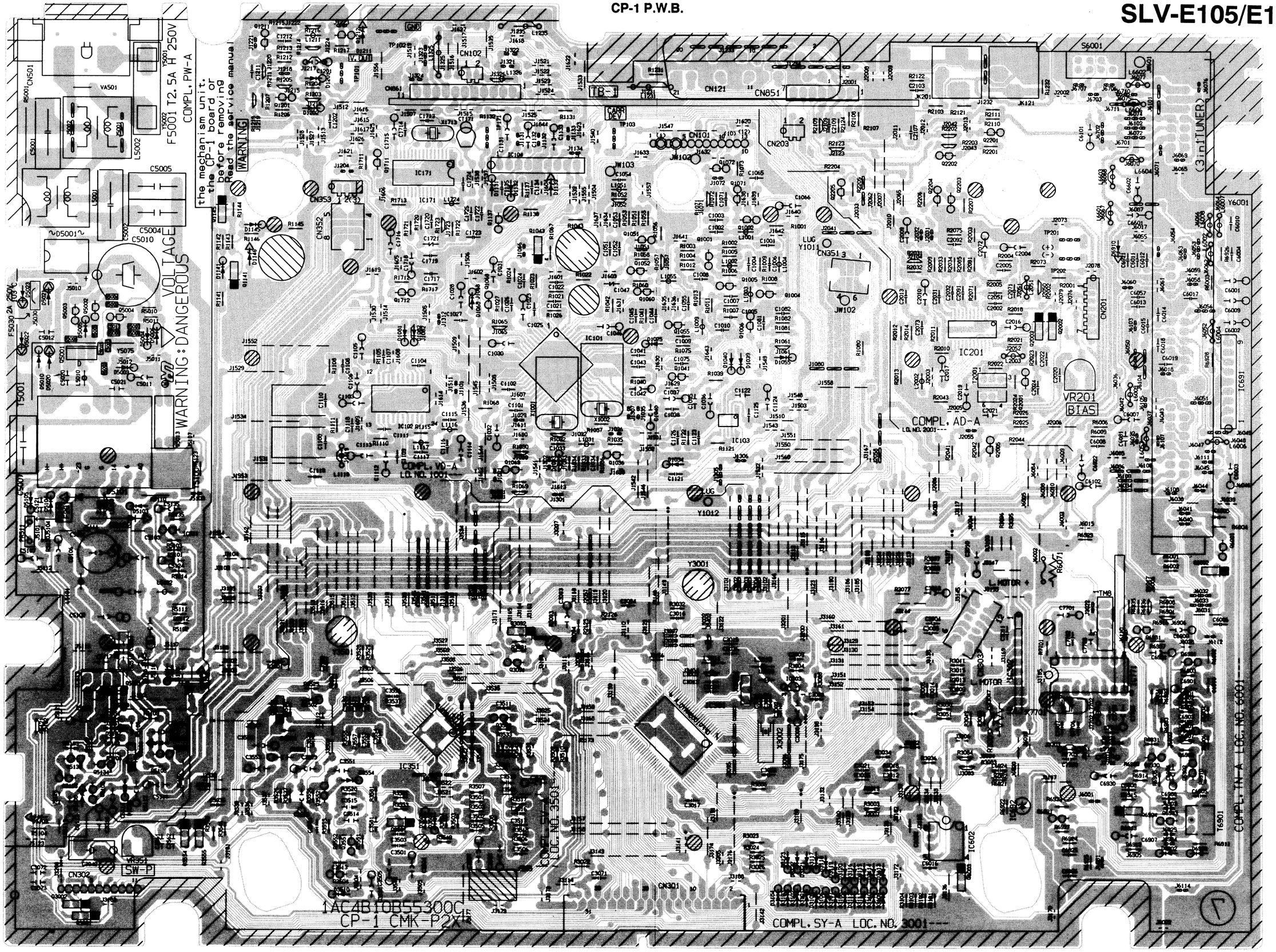
IC301 SYSTEM CONTROL, TIMER, & TUNING CONTROL MPU PIN FUNCTIONS TABLE

No.	Name	I/O	I/O Signal Function
1	C SYNC	I	Sync. signal input for existing channel discrimination and TV system discrimination.
2	ORC PWM	O	Video frequency characteristics switch signal for optimum picture control.
3	DRUM UP	O	Head drum motor rotation speed up signal.
4	SS + DRUM SHIFT	O	Signal for indicating SLOW/STILL modes and alternation of drum motor control data. (3 value voltage)
5	MC - BR	O	Brake signal for capstan motor.
6	C - Vs CUT	O	Cut off for capstan motor control voltage in SLOW / STILL modes.
7	CAP P.	O	Gain down control for Head Motor at SLOW mode.
8	VISS H	I	CTL pulse duty detection signal. For VISS detection.
9	POS SW0	I	Data indicating operation position of mechanism. (0V : SEARCH,STILL,SLOW,STOP,PLAY, and REC modes) (5V : EJECT,REW, and INITIAL modes)
10	FL- START + SAFETY SW	I	Switch input indicating start of cassette loading or discharge by cassette mechanism and detecting accidental erasure prevention tab of cassette tape.
11	-	-	-
12	RESET	I	Initial reset terminal for this IC.
13	CLK 1	-	Clock OSC during power failures.
14	CLK 2	-	Frequency is 32kHz.
15	VSS	-	Ground terminal
16	CF 1	-	IC clock OSC terminal.
17	CF 2	-	Frequency is 6.5MHz.
18	VDD	-	IC power supply terminal. (5Vdc)
19	T. END S.	I	Sensor signal input for tape end detection.
20	T. TOP S.	I	Sensor signal input for tape beginning detection.
21	T. REEL S.	I	Pulse input for detection of take-up reel table rotation.
22	POS SW1+2	I	Data indicating operation position of mechanism. (2V: EJECT,REW ,and INITIAL modes) (3.4V: STOP, PLAY,REC, and F-SEARCH modes) (2.5V: STILL and SLOW modes) (5V: R-SEARCH mode)
23	TAPE SPEED	I	Input of result of tape speed discrimination by digital servo IC.
24	AFT - C	I	Tuner AFT S-curve signal input for tuner AFT control.
25	ENV.	I	Video head envelope detection signal input for ATR function.
26	POWER DOWN	I	Power failure detection terminal.
27	-	-	-
28	50 / 60	O	"H" output during 60 field mode.
29	NAP H	O	"H" output during NTSC (NAP) playback mode.
30	SHORT TEST	I	REC mode indication signal input (REC 12V).
31	C - FG P.	I	FG signal input of capstan motor.
32	-	-	-
33	CTL P.	I	CTL head recording / playback pulse signal input.
34	-	-	-
35	RF SW P.	I	RF switching pulse input, created by head drum PG.
36	REMOCON	I	Remote control signal input.
37	AFT MUTE	O	"H" output during TU AFT mute. (V-syn model only)
38	G9	O	Display grid outputs (FLD).
39	G8	O	
40	G7	O	
41	G6	O	
42	G5	O	
43	G4	O	
44	G3	O	
45	G2	O	
46	G1	O	
47	VDD	-	IC power supply input. (5Vdc)
48	V LOAD	O	-23V input for FLD drive.
49	SEG l	O	Display segment outputs (FLD). (Includes key-scan output)
50	SEG k	O	
51	SEG j	O	
52	SEG i	O	
53	SEG h	O	
54	SEG g	O	Display segment outputs (FLD). (Includes key-scan output)
55	SEG f	O	
56	SEG e	O	
57	SEG d	O	
58	SEG c	O	
59	SEG b	O	
60	SEG a	O	
61	TIMER REC LED	O	Signal for indicating TIMER REC mode.
62	REC LED	O	Signal for indicating REC mode.
63	OPC LED	O	Signal for indicating OPC mode.
64	ATR LED	O	Signal for indicating ATR mode.
65	KEY IN 0	I	Operation key data inputs.
66	KEY IN 1	I	
67	KEY IN 2	I	
68	KEY IN 3	I	
69	-	-	-
70	-	-	-
71	I/OTHERS	O	Signal for RF output TV-system setting. (PAL-I)
72	ACK DET	-	-
73	SV S. DATA	O	Output 8-bit X 4 serial data giving operation mode and tracking data, etc., to digital servo IC.
74	OSD CS	O	Chip enable (access) signal output to OSD IC.
75	TUNER MUTE	O	"H" output for disable tuner audio output signal.
76	SV S. CLK	O	The clock pulse for digital servo IC.
77	S DATA	O	Terminal to respect data with OSD IC and CH+ IC.
78	I2C S.DATA	I/O	Data exchange with tuning memory.(i2C ROM)
79	S CLK	O	The clock pulse for OSD, CH+, tuning memory, PDC ,VPS, MTS and NICAM IC.
80	INPUT SEL A	O	Signal to select audio input source.(except HiFi set)
	TUNER A MUTE	O	Signal for disable the tuner audio signal.(HiFi set)
81	PLL CS	O	Chip enable signal output to tuner IC. (F-syn model)
	TU PWM	O	Tuning voltage output (PWM signal). (V-syn model)
82	BAND 1	O	Tuning band data(BAND 1 and 2 ; for V-syn model).
	PLL DATA	O	Data exchange with tuner PLL IC (for F-syn model).
	BAND 2	O	BAND 1 and 2 ; (L,L)=VHF-LOW (L,H)=VHF-HIGH (H,L)=UHF (H,H)=SKIP. (for V-syn model)
	PLL CLK	O	The clock for PLL IC of tuner unit (for F-syn model).
83	CH PLUS CLK	O	The clock pulse for CH+ in/out-select IC.(CH+ model)
	AV CTL	O	Audio input source selecting for audio IC.
	NTSC 3.58	O	"H" output during NTSC mode.
84	PDC MODE 2	O	Signal to control VPS/PDC IC.
85	LP TRICK H	O	"H" output during LP trick play mode.
86	VD MUTE	O	Signal for enable to output Video signal.
87	INPUT SEL V	O	Signal for selecting video input source.
88	REAR/FRONT	O	Signal for selecting AV-input(video/audio)source/
89	VSS	-	IC ground terminal.
90	VDD	-	IC power supply input.(5Vdc)
91	STILL+SLOW+X2S	O	STILL, SLOW, or X2speed modes indication.
92	SPECIAL PLAY	O	Signal to indicate CUE, REV, STILL and SLOW modes.
93	VPS POWER OFF	O	Signal to turn off front display power signal, when tuner circuit is on for VPS.
94	NORMAL REC	O	Signal for indicating normal audio recording.
95	REC H	O	Signal for indicating recording mode.
96	PB H	O	Signal for indicating playback mode.
97	A MUTE+TU A MUTE	O	"H" output for disable audio output signal.
98	POWER UP	O	"HIGH" output except when power is off. Indicating that power is ON.
99	ML- S	O	Loading motor rotation speed (low / medium / high) indication signal.
100	ML- D	O	Loading motor rotation direction (FWD / REV) indication signal.

PR_TTS_B

● **There are few cases than the part isn't mounted in this model is printed on this diagram.**




COMPL. VD-A
LOC. NO. 1001
COMPL. AD-A
LOC. NO. 2001---
COMPL. SY-A LOC. NO. 3001---
COMPL. TN-A LOC. NO. 6001
1AC4B10B55300C
CP-1 CMK-P2X
WARNING : DANGEROUS VOLTAGE
WARNING
the mechanism unit.
CP-1 board or
before removing
Read the service manual
F5001 T2.5A H 250V
COMPL. PW-A
IC101
IC103
IC201
IC351
IC602
IC691
VR201
BIAS
VR351
[SW-P]
S6001
Y6001
Y3001
Y1012
X1002
CN101
CN102
CN121
CN203
CN351
CN353
CN352
CN851
CN201
CN302
CN3001
JW102
JW103
TB-1
(3in1TUNER)
MOTOR
LOADING MOTOR
SPINDLE MOTOR

SECTION 5
ADJUSTMENTS

1. MAINTAINING AND CHECKING THE MECHANISM

1-1. REGULAR CHECKS AND MAINTENANCE ITEMS

To obtain full function and maximum performance from the set, and to stop it getting dirty or scratched, we recommend that you carry out the following maintenance procedures and regular checks. The maintenance checks described in the following section should also be carried out without fail after carrying out any repairs to the set.

NOTE: OIL AND GREASE

- Always use the specified brands of oil and grease. If you use a grease with the wrong viscosity, for example, this can lead to all sorts of problems. Be careful to keep the oil and grease free of dust and foreign bodies.
- A "drop" of oil is the amount of oil remaining on the tip of a rod with a diameter of 1.5mm after it is dipped in oil to a depth of 1cm and then taken out.

1-1-1. REGULAR CHECKS

○Clean ◎Check △Oil

Part maintained \ Hours of use (H)		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	Remarks
Tape path system	Tape guide	○	○	○	○	○	○	○	○	○	○	
	ACE head, full erase head	○	○	○	○	○	○	○	○	○	○	
	Cylinder (drum)	○	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	○ (◎)	The life of parts varies enormously, depending on the environment in which the part is used.
	Cleaner roller assembly		◎		◎		◎		◎		◎	
	Pinch roller	○	○	○	○	○	○	○	○	○	○	
Drive system	Reel table		○		○△		○		○△		○	
	Reel belt	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	
	Relay gear, Pulley shaft, Gear shaft		△		△		△		△		△	
	Loading motor		◎		◎		◎		◎		◎	
Perform-ance checks	Back tension		◎		◎		◎		◎		◎	Playback tension torque: 30 to 50g/cm
	Brake system		◎		◎		◎		◎		◎	
	FWD, REW, PLAY torque, REV torque		◎		◎		◎		◎		◎	FWD: 600g/cm or over REW: 600g/cm or over PLAY (SP mode): 80 to 140g/cm REV: 120 to 220g/cm

1-1-2. CLEANING

1. Cylinder (Drum) (See Fig.1-1-1)

Moisten a chamois with methyl alcohol and clean the video head (including the Hi-Fi audio head) and the tape path surface of the cylinder. Be sure to wipe horizontally in relation to the video head. If you wipe vertically, or use excessive force, you can damage the video head.

2. Tape Path System / Reel Drive System

Clean the pinch roller, the capstan shaft, the tape guides, the FE head, the ACE head, the reel table, the pulley and the reel belt with a soft cloth, or chamois, moistened with methyl alcohol.

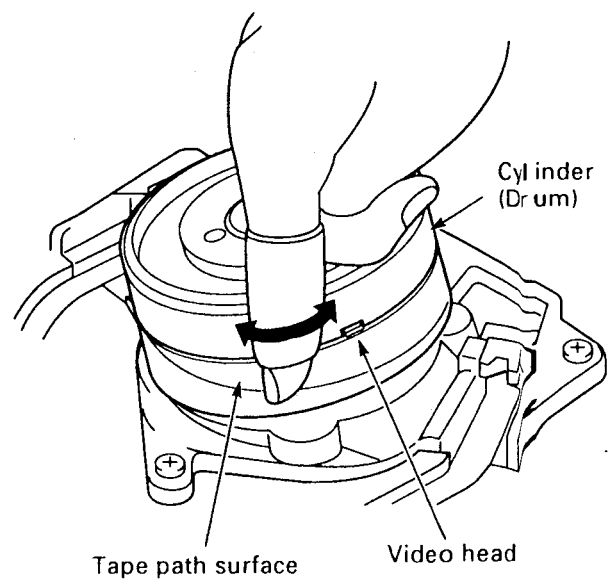


Fig.1-1-1

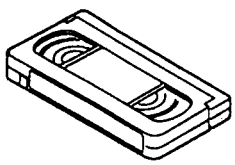
1-2. SERVICE TOOLS

1-2-1. SERVICE TOOLS

NOTES ON ALIGNMENT TAPES

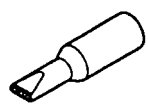
Select a PAL or NTSC alignment tape from the list below, according to the transmission system of the VCR you are repairing.
PAL : For models with 625 scanning lines and a field frequency of 50Hz.
NTSC : For models with 525 scanning lines and a field frequency of 50Hz.

No.	Tool	Tool No.	Remarks
1	Alignment tape NTSC (MH-1)	H-7099-046-H	NTSC-NORMAL
2	Alignment tape PAL (MH-2)	H-7099-052-H	PAL-NORMAL
3	Eccentric screw driver (VHJ-0003)	J-6082-044-A	Used to adjust the tape path
4	Nut box (VHJ-0048)	J-6082-045-A	Used to adjust the height of the lever load assembly
5	Torque gauge	H-7099-039-H	Used to measure reel winding torque
6	Torque gauge adaptor	H-7099-035-H	Used to measure reel winding torque
7	Cassette torque meter (VHJ-063S)	NTSC : J-6082-011-A PAL : J-6082-066-A	Used to measure back tension torque
8	Load lever assembly height adjust tool (VHJ-0102)	H-6090-055-A	Used to adjust the height of the load lever assembly
9	Torque gauge screw driver (VHJ-0014)	J-6082-047-A	Used to adjust the tightening torque of screws
10	3mm dia. bit for torque screwdriver (VHJ-0045)	J-6082-048-A	Used to replace the bit of the torque gauge screwdriver
11	Video head femoving tool (VHJ-0041)	J-6082-049-A	Used to remove the upper cylinder
12	Oil (NT-68)	7-661-018-18	
13	Relay cables (VHJ-0106)	J-6090-057-A	Relay cables of mechanism and CP-1 PWB assembly
14	Relay cable (VHJ-0065)	J-6082-078-A	Relay cable of cylinder and VP-1 PWB assembly



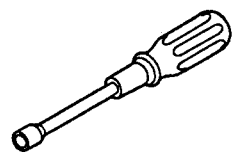
No. 1, 2

J-6082-044-A (VHJ-0003)



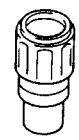
No. 3

J-6082-045-A (VHJ-0048)



No. 4

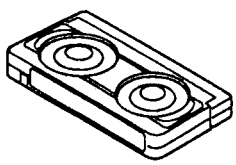
H-7099-039-H



H-7099-035-A

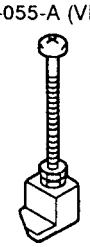
No. 5, 6

J-6082-011-A (NTSC) (VHT-063S)
J-6082-066-A (PAL) (VHT-063S)



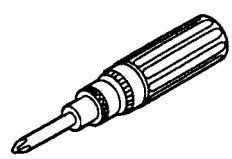
No. 7

J-6090-055-A (VHJ-0102)



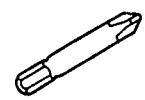
No. 8

J-6082-047-A (VHJ-0014)



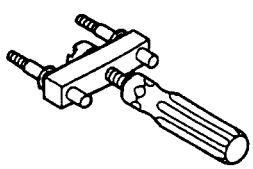
No. 9

J-6082-048-A (VHJ-0045)



No. 10

J-6082-049-A (VHJ-0041)

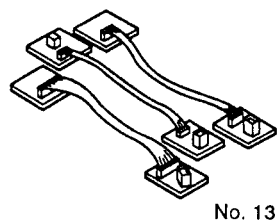


No. 11

7-661-018-18 (NT-68)

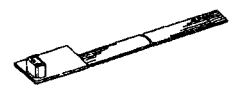
No. 12

J-6090-057-A (VHJ-0106)



No. 13

J-6082-078-A (VHJ-0065)



No. 14

1-2-2. Using the Relay Cable (VHJ-0106)

The mechanism can be repaired without using the relay cable (VHJ-0106). As shown in Fig. 1-2-2, the relay cable (VHJ-0106) is a tool used for relay between the CP-1 PWB assembly and mechanism unit.
When connecting it, take note of the pin number of the connector.

NOTE 1: Do not place the mechanism upright as shown in Fig. 1-2-2 when inserting/ejecting the cassette.
NOTE 2: For NTSC models, be sure to connect the VM-1 PWB assembly and CP-1 PWB assembly.

Note : Since this set is for PAL system only, a service jig for NTSC system cannot be used with this set.

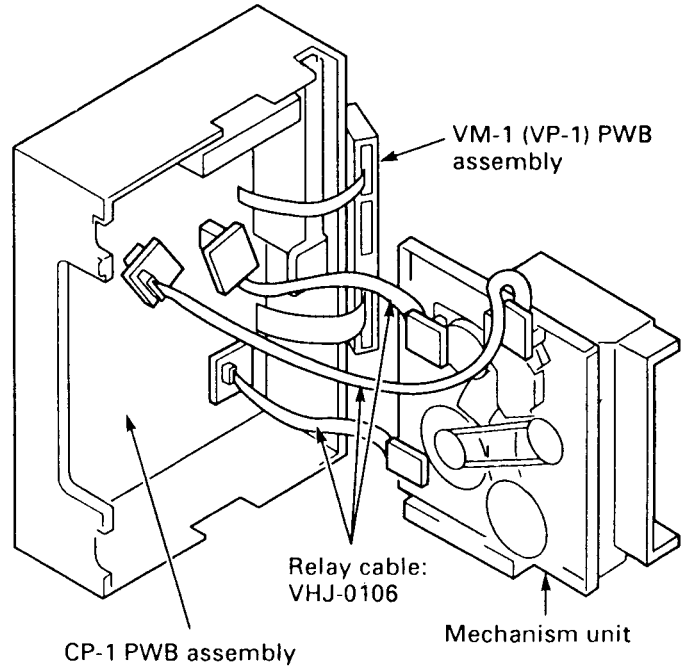


Fig. 1-2-2

2. AN OVERVIEW OF THE MECHANISM

2-1. NAMES OF THE MAIN PARTS

2-1-1. CASSETTE MECHANISM ASSEMBLY

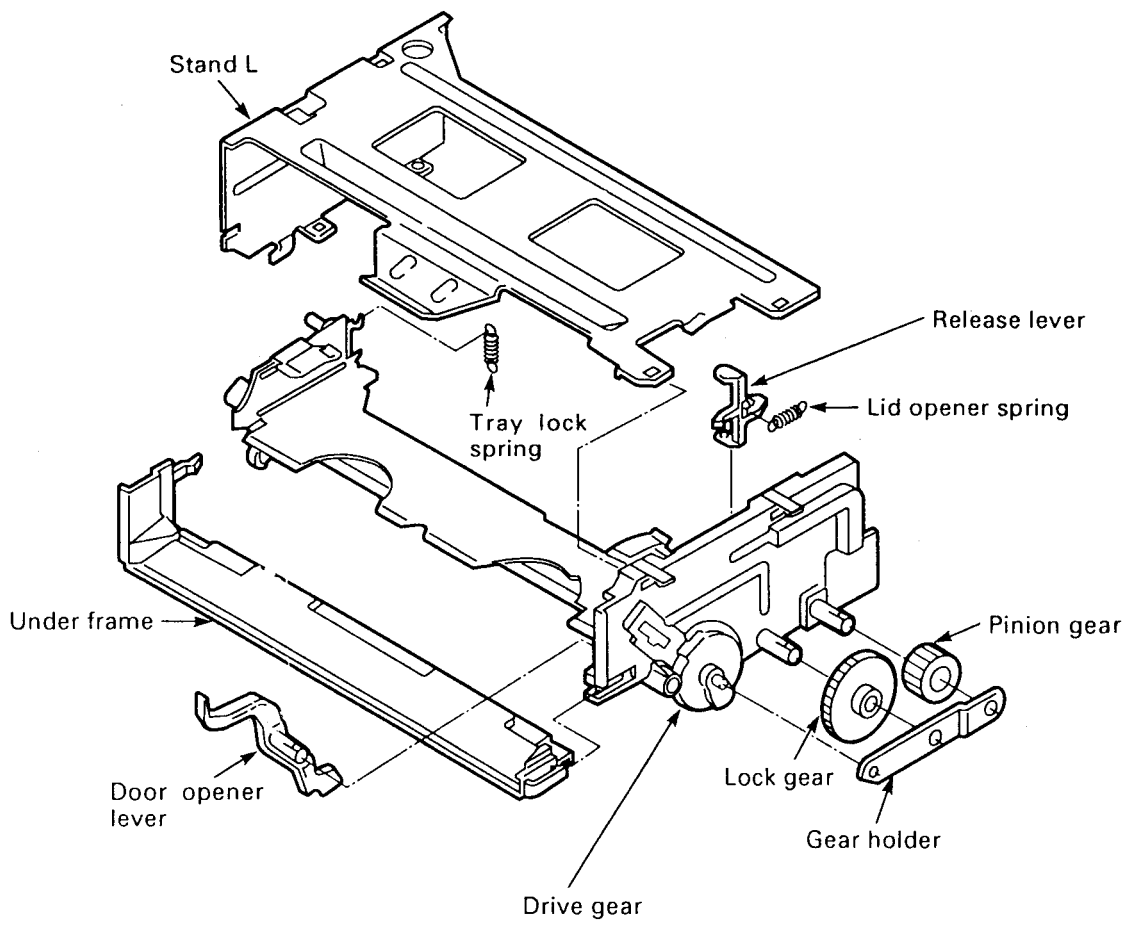


Fig. 2-1-1

2-1-2. TOPVIEW

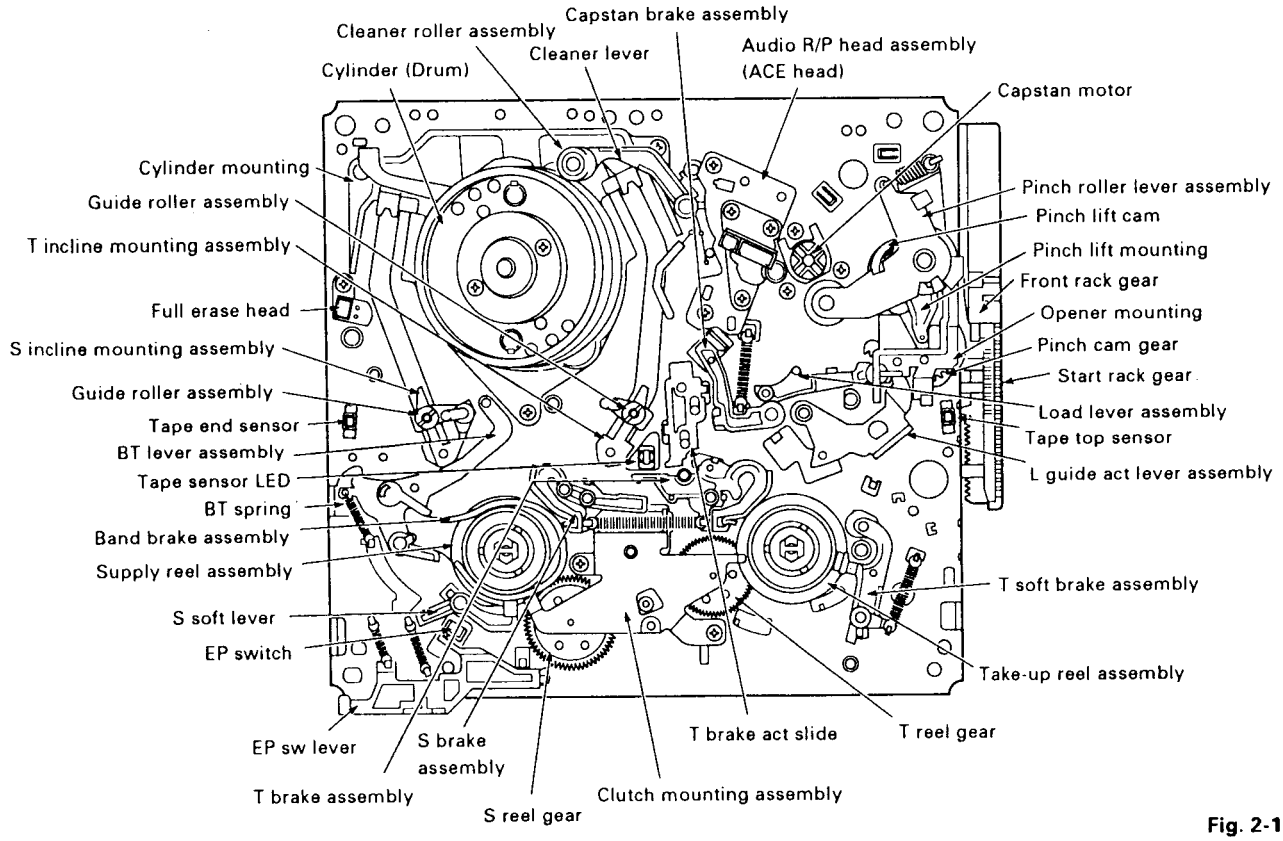


Fig. 2-1-2

2-1-3. UNDERSIDE

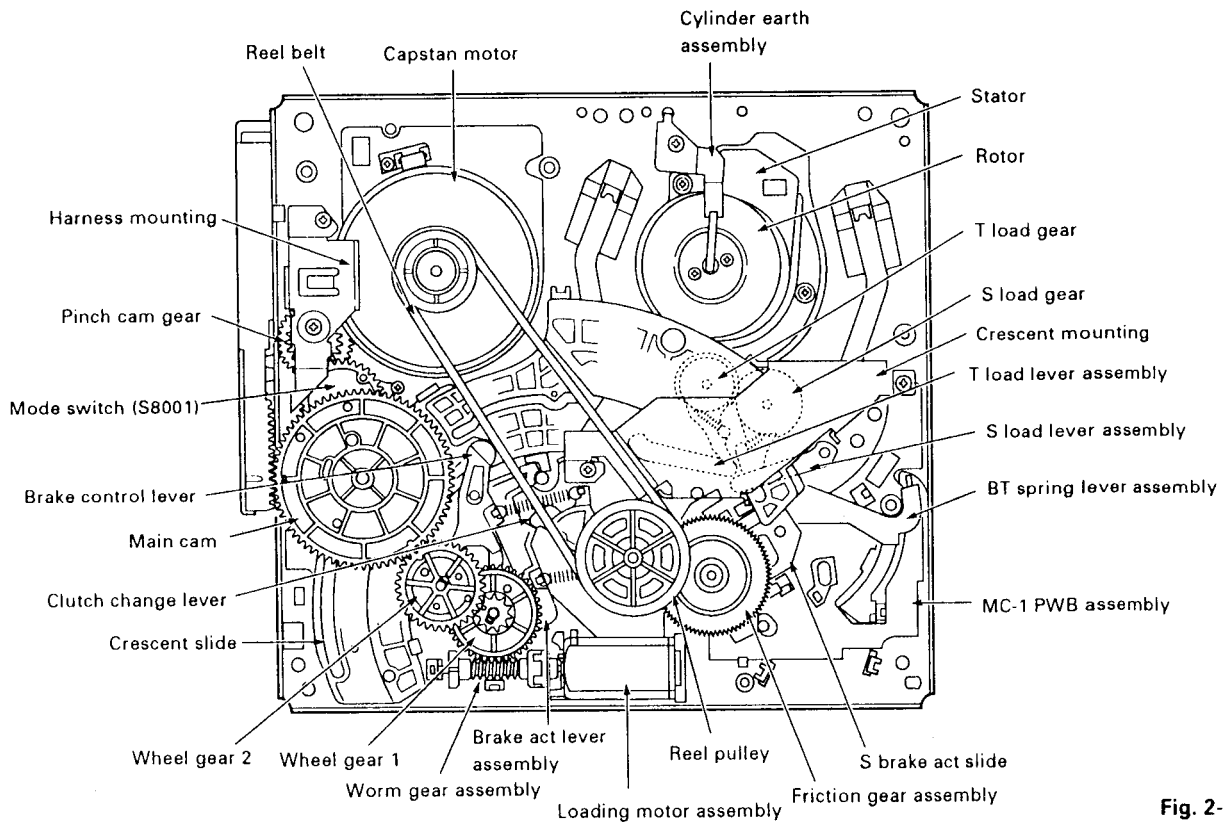
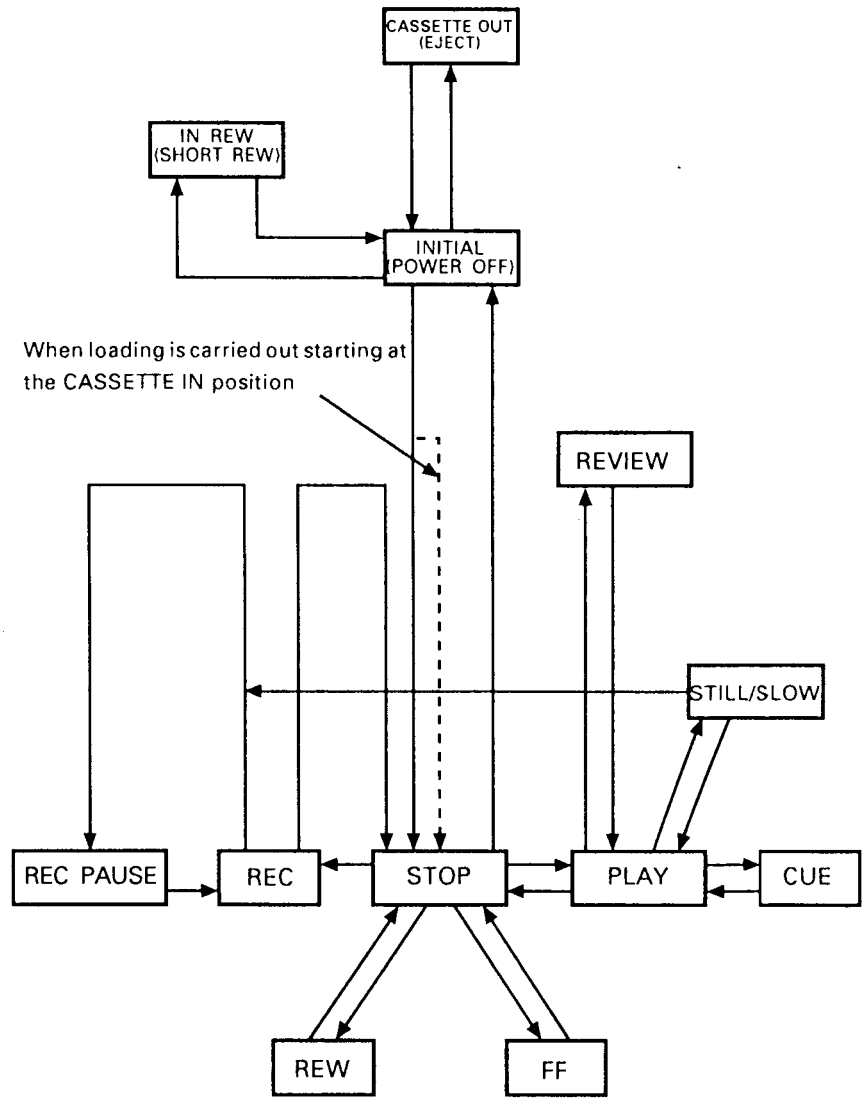


Fig. 2-1-3

2-2. AN OVERVIEW OF THE MECHANISM MODES

2-2-1. MECHANISM MODE SWITCHING TABLE

NOTE: The letters and figures enclosed in circles in the mechanism mode column are the codes on the crescent slide.

HEX DATA	Mechanism mode	The principal mode-switching states of the mechanism
6	EJECT Ⓔ	
2	Distinguished by whether the EP switch is ON or OFF. Horizontal shift section. Vertical shift section.	
6	IN REW Ⓡ	
0		
7	INITIAL ⑦	
0		
1	Cleaner roller assembly: ON S/T mounting incline assembly pressure begins.	
0	S/T mounting incline assembly pressure ends.	
1	REVIEW ①	
0		
2	IDLER pos. ② (Pinch roller OFF)	
0		
3	STILL/SLOW ③	
0		
5	PLAY/STOP ⑤	
0		
4	BRAKE pos. ④	
0		
6	FF/REW ⑥	

MODE SWITCH OUTPUT TABLE

HEX DATA	SW DATA 1	X	Y	SW DATA 2 Z	
0	5.0V	H	H	H	5V
1	5.0V	H	H	L	0V
2	2.5V	H	L	H	5V
3	2.5V	H	L	L	0V
4	3.4V	L	H	H	5V
5	3.4V	L	H	L	0V
6	2.0V	L	L	H	5V
7	2.0V	L	L	L	0V

APPEARANCE OF MODE SWITCH AND RELATIONSHIP BETWEEN MODE POSITIONS

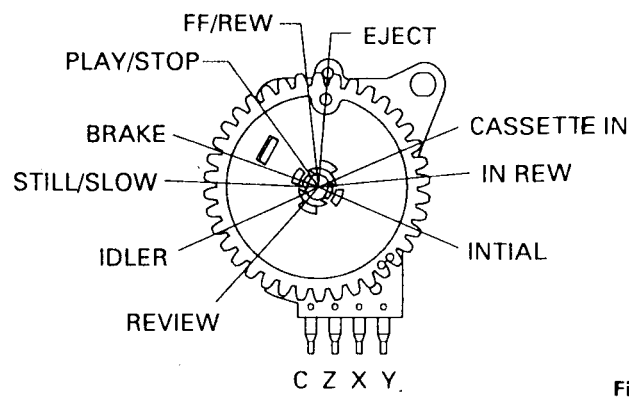


Fig.2-2-1

2-2-2. MOVEMENT CHECK LIST FOR THE MAIN PARTS OF THE MECHANISM

(S): Strength (W): Weakness

Principal parts \ Mechanism mode	EJECT	IN REW	INITIAL (POWER OFF)	(LOADING)	(UNLOADING)	REV	IDLER	STILL/SLOW	PLAY/STOP	BRAKE	FF/REW	
T brake assembly	OFF	OFF	ON	ON	ON	OFF	OFF	OFF	OFF	ON	ON/OFF	
S brake assembly	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON/OFF	
T soft brake assembly	OFF	OFF	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	
S soft lever	ON	ON	ON	ON	ON	OFF	OFF	OFF	OFF	OFF	OFF	
BT lever assembly	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON	
BT spring	OFF	OFF	OFF	OFF	OFF	ON(W)	ON(W)	ON(S)	ON(S)	ON(S)	ON(W)	
Pinch roller lever assembly	UP	UP	UP	UP/ DOWN	DOWN/ UP	ON	OFF	ON	ON	OFF	OFF	
Clutch mounting assembly	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	PLAY	FF	
Load lever assembly	UNLO	UNLO	LO	LO	LO	LO	LO	LO	LO	LO	LO	
Capstan brake assembly	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	OFF	OFF	OFF	
S and T incline mounting assembly				LO	UNLO							
Cleaner roller assembly	OFF	OFF	OFF	(ON)	(ON)	OFF	OFF	OFF	OFF	OFF	OFF	

2-2-3. HOW TO CHECK THE MECHANISM MODE POSITION

You can tell which mode the mechanism is currently in by looking at the codes and marking-lines on the crescent slide on the underside of the mechanism chassis. The edge of the crescent mounting is used as the reference line, as shown in Fig.2-2-2, and the marking-lines and symbols indicating the mechanism modes are displayed on the crescent slide, which slides against the edge of the crescent mounting. The mechanism mode is read off from the marking-line on the slide crescent which is aligned with the reference-line on the crescent mounting.

Example: In Fig.2-2-2, marking-line 6 is aligned with the reference-line on the crescent mounting, so the mechanism is seen to be in FF/REW mode.

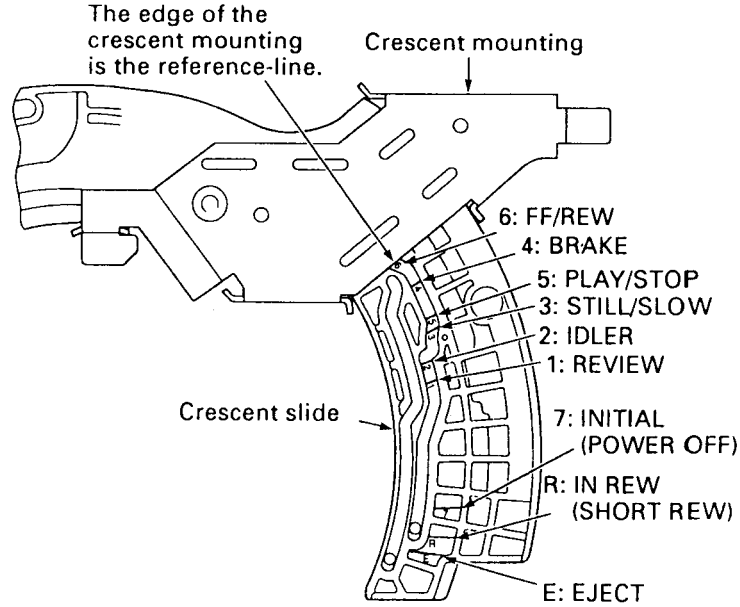


Fig.2-2-2

2-2-4. SELF-DIAGNOSIS DISPLAY

Some models are equipped with the SELF-DIAGNOSIS DISPLAYS function.

Use it as a means of finding out the symptoms and cause of the error before performing repairs.

For details, refer to the separate service manual for the respective models.

3. DISASSEMBLING THE MAIN PARTS OF THE MECHANISM

POINTS TO NOTE

- When fitting the parts of the mechanism, refer to the "Assembly Notes", and proceed in the reverse of dis-assembly order.
- Dis-assembly and assembly should be carried out in EJECT mode unless a movement mode is explicitly specified. EJECT mode is the state in which the cassette tape has been ejected.
- Clamps are used to prevent parts coming loose. When removing a clamp, be careful not to force it, as this can result in damage.

3-1. HOW TO MAKE THE MECHANISM MOVE

In order to check a movement such as front loading, front unloading, tape loading, tape unloading, raising/lowering and pressing the pinch roller, you will need to operate the loading motor. There are two methods of operating the loading motor, and these are explained in sections 3-1-1 and 3-1-2. The above movements can also be performed without operating the loading motor, by following the method explained in section 3-1-3.

3-1-1. HOW TO OPERATE THE LOADING MOTOR USING A DC VOLTAGE SUPPLY (See Fig.3-1-1)

1) Remove the power plug from the socket.
2) Remove the top cover, front cabinet assembly and bottom cover.
3) Supply a DC voltage in the range 5V between the MOTOR (+) wire and the MOTOR (–) wire on the CP-1 PWB assembly. To make the loading motor rotate in the PLAY or FF/REW direction, the positive terminal should be connected to the MOTOR (+) wire, and the negative terminal to the MOTOR (–) wire. To make it rotate in the EJECT direction, connect the positive terminal to the MOTOR (–) wire, and the negative terminal to the MOTOR (+) wire.
   When rotating the loading motor in the EJECT direction with a tape slacken, stop the rotation of the loading motor before beginning front unloading.
   Rotate the capstan motor with your hand, wind the slacked part of the tape, and rotate the loading motor in the EJECT direction again.

NOTE 1: When carrying out front loading, release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ of the cassette mechanism assembly (shown in Fig.3-2-2) in the direction of the arrow.

NOTE 2: When the loading motor stops rotating, following the completion of an operation such as tape loading or front unloading, switch off the DC voltage supply.

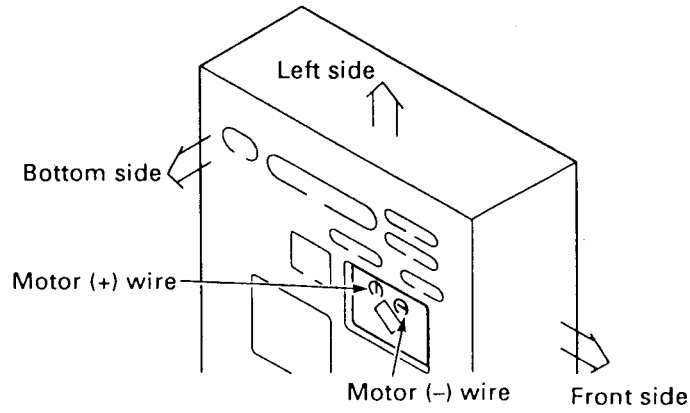


Fig.3-1-1

3-1-2. OPERATING THE LOADING MOTOR BY THE MANUAL METHOD (See Fig.3-1-2)

1) Refer to section 3-2 and install the mechanism unit.
2) Using your finger, turn the loading motor located at the rear of the mechanism unit. For EJECT, turn the loading motor in the direction of the arrow on the loading motor. For PLAY or FF/REW, turn it in the opposite direction.
   When rotating the loading motor in the EJECT direction with a tape slacken, stop the rotation of the loading motor before beginning front unloading.
   Rotate the capstan motor with your hand, wind the slacked part of the tape, and rotate the loading motor in the EJECT direction again.
   When carrying out front loading, release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ of the cassette mechanism assembly (shown in Fig.3-2-2).

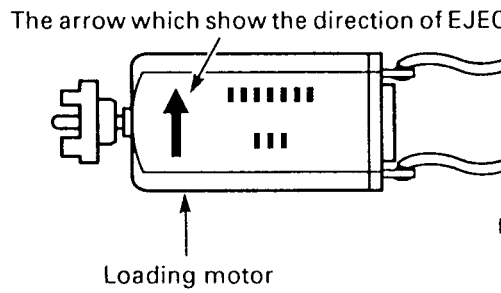


Fig.3-1-2

3-1-3. MAKING THE MECHANISM MOVE USING THE MANUAL METHOD

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-15 and remove the gear wheel 2.
3) If you turn the main cam anticlockwise, the mechanism will switch to a mode such as PLAY or FF/REW. To switch from FF/REW mode to EJECT mode, turn the main cam clockwise.

3-2. MECHANISM UNIT (See Figs. 3-2-1 and 3-2-2)

1) Remove the top cover, bottom cover and front cabinet assembly.
2) Unplug the flat cable ① from the VM-1/VP-1 PWB assembly on the cylinder (drum), and unplug the ACE head connector ③.
3) Remove the screw ②, the two screws ④, then remove the VM-1/VP-1 PWB assembly ⑤, lifting it upwards. The shape of the VM-1/VP-1 PWB assembly and the bracket varies according to the model.
4) Remove the four screws ⑥ and the two screws ⑩, then lift up the mechanism unit. The tray ⑦ will stop you removing the two screws ⑥ on the front, so release the lock by pressing down the tray lock lever ⑧ and the lid opener lever ⑨ shown in Fig.3-2-2, then slide off the tray ⑦. Move the tray by referring to section 3-1 and turn the loading motor in the PLAY direction.

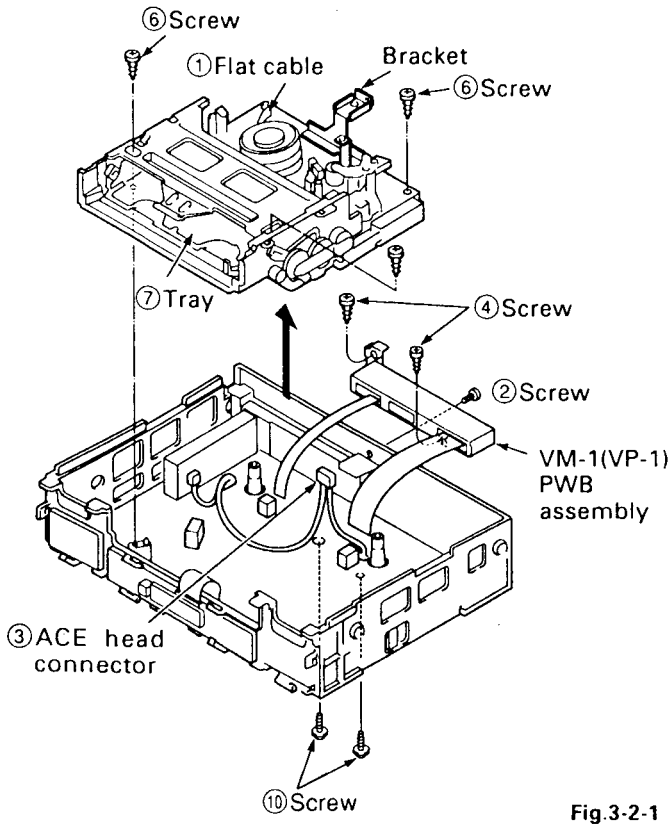


Fig.3-2-1

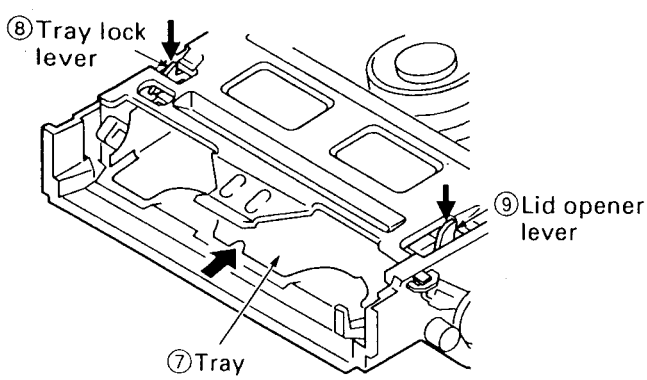


Fig.3-2-2

3-3. CASSETTE DRIVE MECHANISM

3-3-1. CASSETTE MECHANISM ASSEMBLY (See Figs.3-3-1 and 3-3-2)

1) Put the VCR into EJECT mode.
2) Remove the two screws ①.
3) Lift up the back of the cassette mechanism assembly ② slightly, and remove the two hooks ③ on the front.

ASSEMBLY NOTES:

1. The cassette mechanism assembly and the mechanism chassis should both be fitted in EJECT mode.
2. Check that the two hooks ③ have snapped into the mechanism chassis, and make sure that the two holes ④ in the cassette mechanism assembly are aligned with the two dowels ⑤ on the mechanism chassis.
3. Make sure that the big tooth on the pinion gear of the cassette mechanism assembly slots properly into the deepest gap in the start rack gear, as shown in Fig.3-3-2.
4. When fitting the two screws ①, use the torque gauge screwdriver (VHJ-0014). Give the screws a tightening torque of 5 kg/cm.

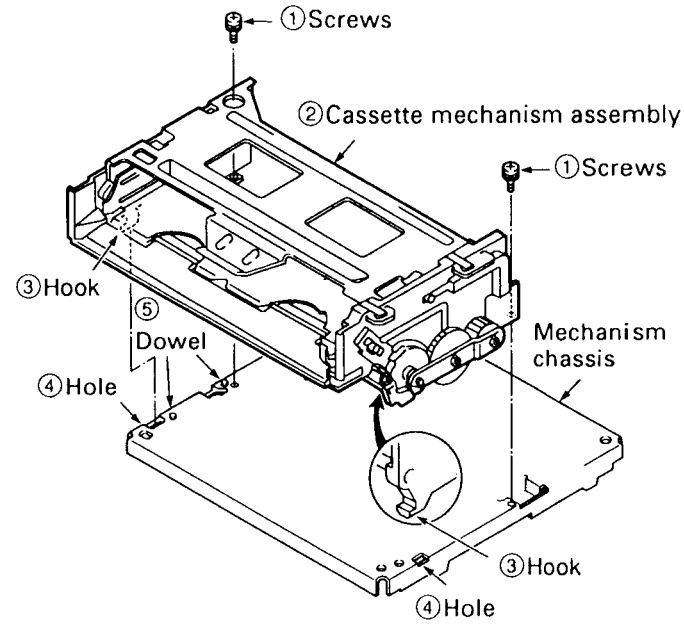


Fig.3-3-1

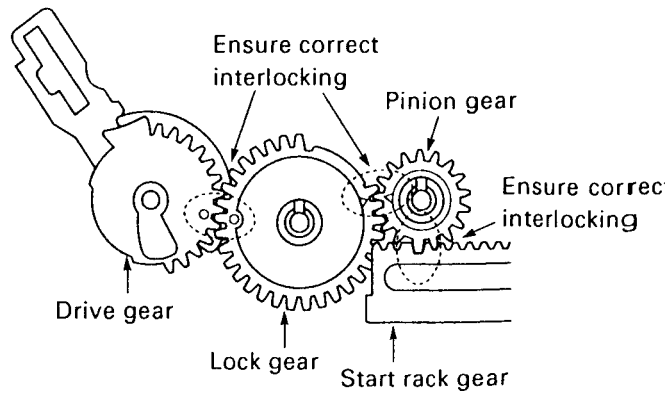


Fig.3-3-2

3-3-2. CASSETTE DRIVE GEAR (See Fig.3-3-3)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove clamps ① and ②, then remove the gear holder ③.
3) Remove the clamp ①, then remove the pinion gear ④.
4) Remove the clamp ②, then remove the lock gear ⑤.

ASSEMBLY NOTES:

1. Put the tray in the EJECT mode position before fitting any parts.
2. Apply grease SGL-505 to the gear mounting shafts, all the gear teeth, and the cam part of the drive gear ⑥.
3. Ensure that the drive gear, the lock gear and the pinion gear interlock correctly, as shown in Fig.3-3-2.
4. Make sure the clamps ① and ② snap in to the gear holder ③.

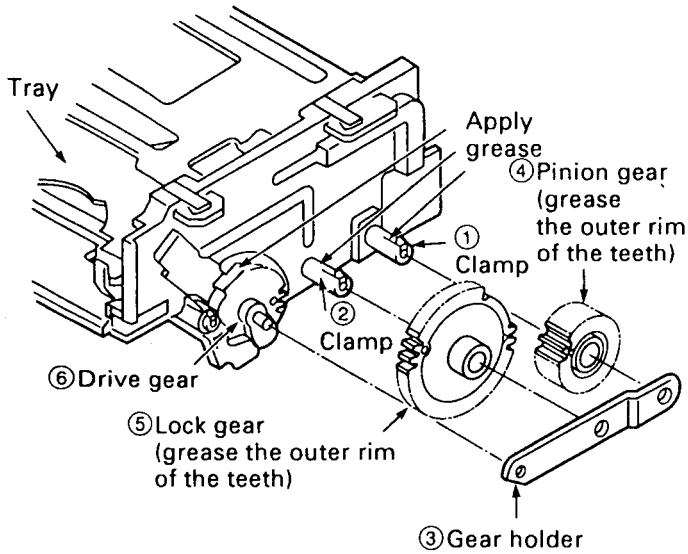


Fig.3-3-3

3-3-3. DOOR OPENER, UNDER FRAME AND STAND L (See Fig.3-3-4)

1) Remove the cassette mechanism assembly, referring to section 3-1.
2) Remove the two clamps ① and take out the under frame ②, pulling it towards you.
3) Press down the tray lock lever ③ and the lid opener lever ④, and loosen the tray ⑤, lifting it away from you. In this state, press the clamp ⑥ and remove the door opener lever ⑦.
4) Remove the two clamps ⑧ and take out the stand L ⑨. Be careful not to exert too much force on the clamps ⑧, as this could cause damage.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the grooves ⑪ on the stand L, the inside of the hole ⑬ in the drive shaft ⑫, and the mounting hole ⑭ in the door opener lever of the stand R.
2. Before fitting the stand L ⑨, be sure to move the tray ⑤ back as far as the EJECT mode position. Put the two pins ⑩ on the tray ⑤ into the grooves ⑪ on the stand L. Put the drive shaft ⑫ into the hole ⑬.
3. Be sure to fasten the two clamps ① and the clamp ⑥ on the stand R, and to fasten the two clamps ⑧ on the stand L.

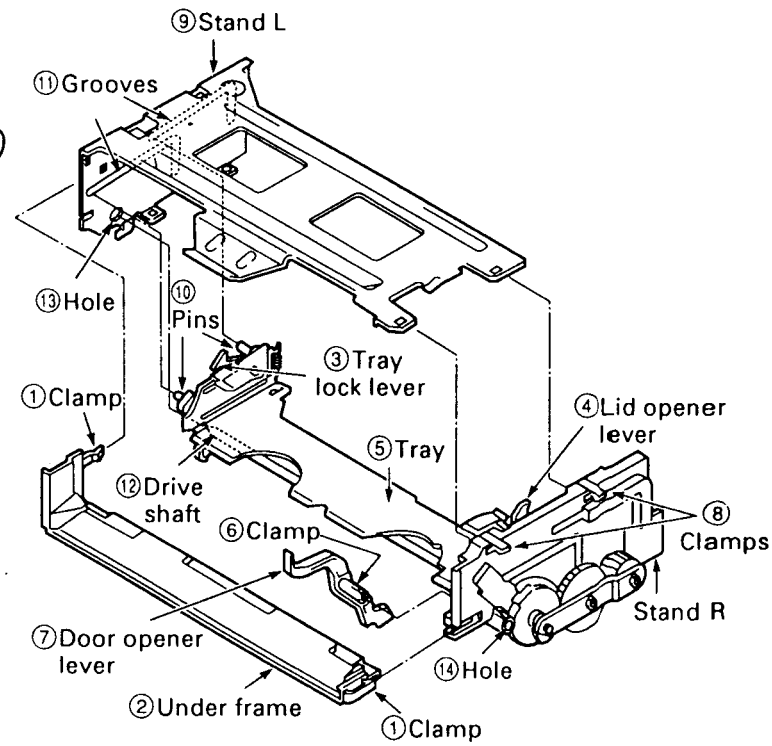


Fig.3-3-4

3-3-4. START RACK GEAR AND FRONT RACK GEAR (See Figs.3-3-5 and 3-3-6)

1) Remove the mechanism unit, referring to section 3-2.
2) Remove the cassette mechanism assembly, referring to section 3-3-1.
3) Remove the special screw ①. When you do this, slide the front rack gear assembly ② towards the front until it stops, then take it off the shaft ③. Take care not to damage the shaft ③.
4) Remove the spring ④.
5) Remove the clamp ⑥ on the front rack gear ⑤, then remove the start rack gear ⑦.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the front rack gear ⑤ and all over the inside of the groove on the start rack gear ⑦.
2. Align the positioning mark ⑧ on the front rack gear ⑤ with the mark ⑩ on the main cam ⑨.
3. When installing the cassette mechanism assembly, refer to section 3-3-1 and align the start rack gear with the pinion gear.

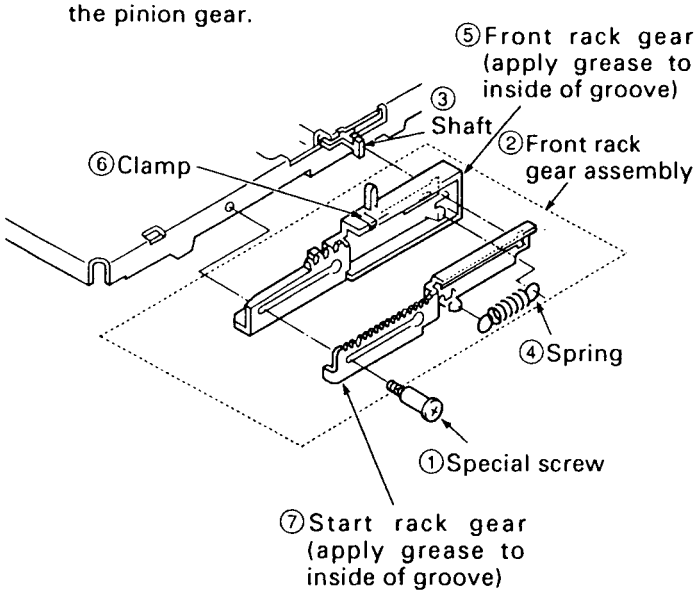

⑤Front rack gear (apply grease to inside of groove)
③ Shaft
⑥Clamp
②Front rack gear assembly
④Spring
①Special screw
⑦Start rack gear (apply grease to inside of groove)

Fig.3-3-5

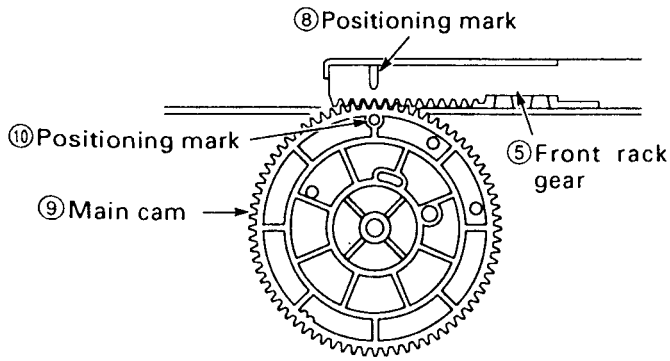


Fig.3-3-6

3-4. CLEANER ROLLER ASSEMBLY (See Fig.3-4-1)

1) Remove the clamp ① and take out the cleaner lever ②. When you do this, be careful not to bend the plastic springs Ⓐ and Ⓑ on the cleaner lever ②.
2) Remove the clamp ③, and take out the cleaner roller assembly ④. Be careful not to touch the sponge on the cleaner roller assembly ④.

ASSEMBLY NOTES:

1. When mounting the cleaner lever ② on the shaft ⑤, press the clamp ① in the direction shown by the arrow, and snap it into the mounting ⑥ on the audio R/P head assembly.

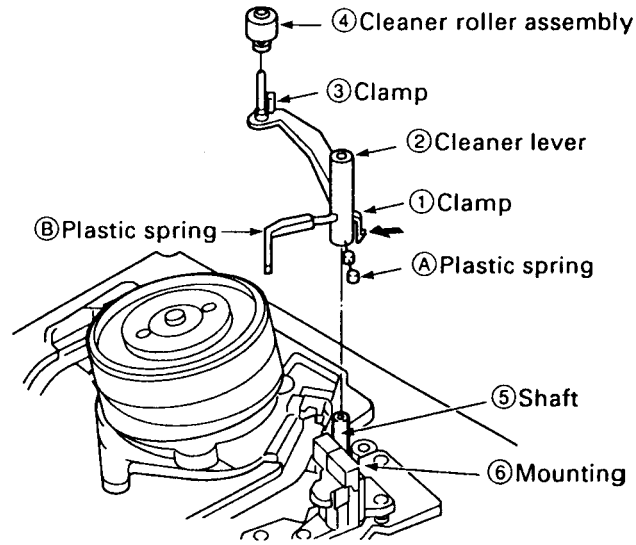


Fig.3-4-1

3-5. CYLINDER (DRUM)

3-5-1. UPPER CYLINDER ASSEMBLY (UPPER DRUM) (See Figs. 3-5-1, 3-5-2, 3-5-3, 3-5-4)

There are two types of cylinders, one that can be disassembled into the upper cylinder (upper drum) and lower cylinder (lower drum) and one that cannot. For that type that cannot, replace the cylinder assembly as a whole.

1) Remove the two screws ① (See Fig.3-5-1).
2) First, tighten the handle② of the video head removing tool (VHJ-0041), then screw the two long screws ③ evenly into the two screw holes ⑤ in the upper cylinder assembly (upper drum)④ (See Fig. 3-5-2).
3) Hold the tool (VHJ-0041) so that the upper cylinder assembly (upper drum) ④ does not rotate, and at the same time, turn the handle ② clockwise, and remove the upper cylinder assembly (upper drum) ④.
4) Remove the tool (VHJ-0041) from the upper cylinder assembly ④.

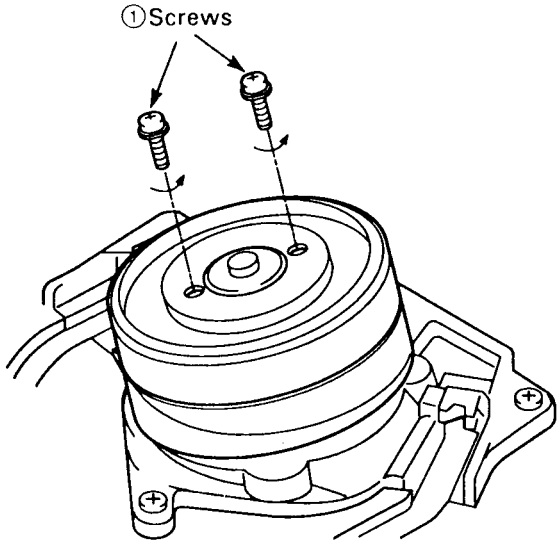


Fig.3-5-1

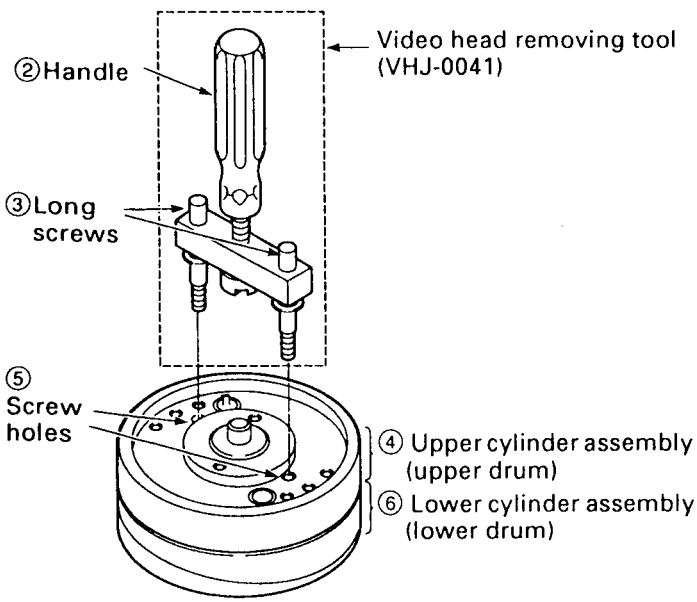


Fig.3-5-2

ASSEMBLY NOTES:

1. When carrying out assembly, the CH-1 head on the upper cylinder assembly (upper drum)④ and the lower cylinder assembly (lower drum)⑥ must be aligned. The CH-1 head on the upper cylinder assembly④ bears a code⑦ such as 2N2S-V, 2N4N, or 4H6N, as shown in Fig.3-5-3. The CH-1 on the lower cylinder assembly ⑥ has a round hole ⑧, as shown in Fig.3-5-4. Assemble the parts so that the round hole ⑧ is next to the code ⑦ on the upper cylinder assembly.
2. Be careful not to scratch the tape path surface of the cylinder. After replacing the cylinder, clean the tape path surface of the cylinder.
3. After replacing the upper cylinder assembly, do the tape path adjustment as instructed in section 4-3 and do the swithching position adjustment of the servo circuit.

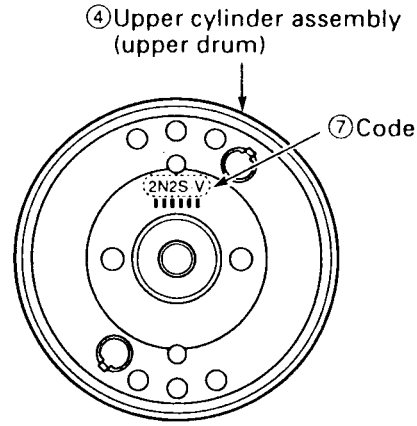
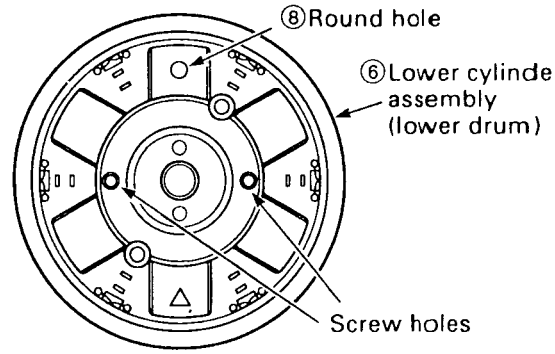
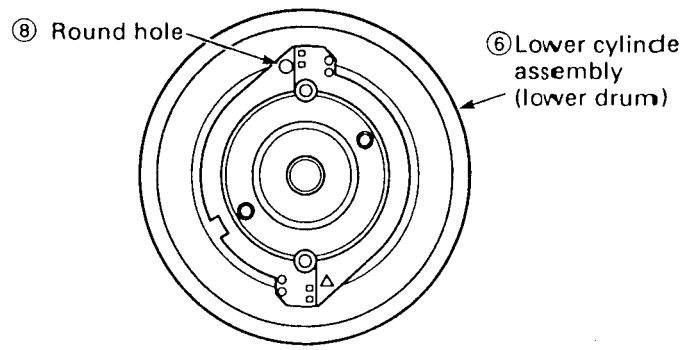


Fig.3-5-3

[EXCEPT FOR 2-HEAD MONAURAL MODELS]



[2-HEAD MONAURAL MODELS ONLY]



3-5-2. CYLINDER (DRUM) UNIT (See Fig.3-5-5)

1) Put the mechanism into EJECT mode.
2) Refer to section 3-2 and remove the VM-1/VP-1 PWB assembly
3) Refer to section 3-4 and remove the cleaner lever.
4) Remove the two screws ① and take off the bracket ②. The bracket shape varies according to the model.
5) Remove the three screws ③. Taking care not to scratch or soil the tape path surface of the cylinder (drum), lift the mounting cylinder ④ slightly, and keeping it raised.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the rails (front and rear) of the cylinder mounting ④ (grease the parts which come in contact with the S and T incline mounting assembly).
2. Align the two dowels ⑥ on the mounting cylinder ④ with the two holes ⑦ on the mechanism chassis. Check that connector is inserted in the CP-1 PWB assembly.
3. After assembly, clean the tape path surface of the cylinder (drum).
4. After replacing the cylinder unit, do the tape path adjustment as instructed in section 4-3, and do the switching position adjustment of the servo circuit.

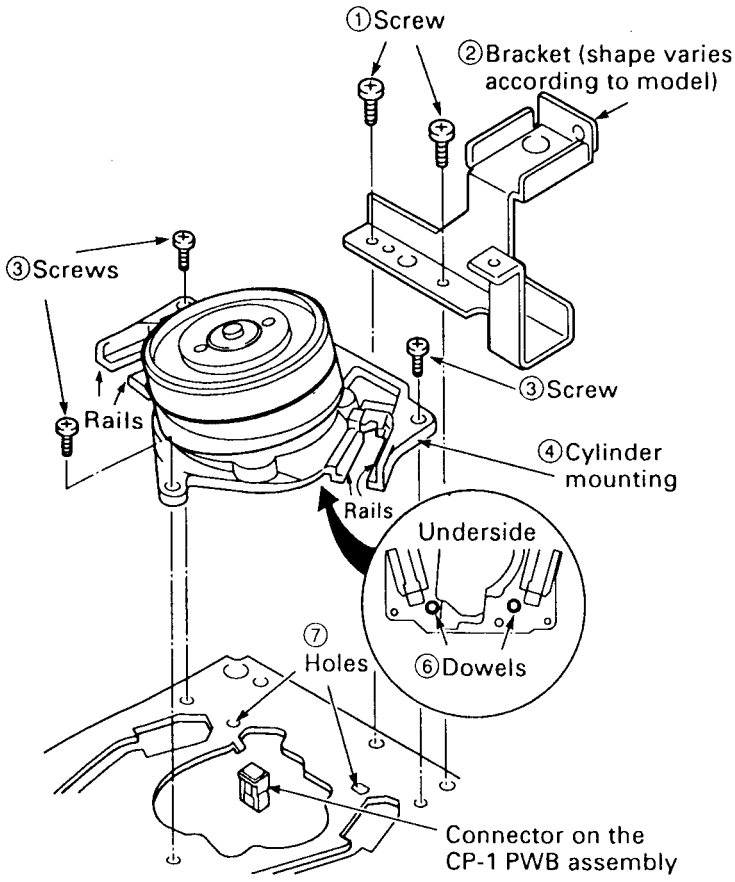


Fig.3-5-5

3-5-3. CYLINDER MOTOR (ROTOR AND STATOR) (See Fig.3-5-6)

1) Refer to section 3-5-2 and remove the cylinder unit.
2) If you have removed the mechanism unit, remove the screw ① and remove the cylinder earth assembly ②.
3) Remove the two screws ③, the rotor ④ and the spacer ⑧.
4) Remove the three screws ⑤ and the stator ⑥.

ASSEMBLY NOTES:

1. When fitting the rotor ④, align the long hole ⑨ -beside the triangular mark on the rotor ④ - with the hole ⑩ in the rotor disk.
2. When fitting the screws ③ and ⑤, use the torque gauge screwdriver (VHJ-0014). give the screws a tightening torque of 3 kg/cm.
3. Align the dowel ⑪ on the cylinder earth assembly ② with the hole ⑫ in the chassis.
4. If you have removed the cylinder unit, after assembly, do the tape path adjustment as instructed in section 4-3, and do the switching position adjustment of the servo circuit.

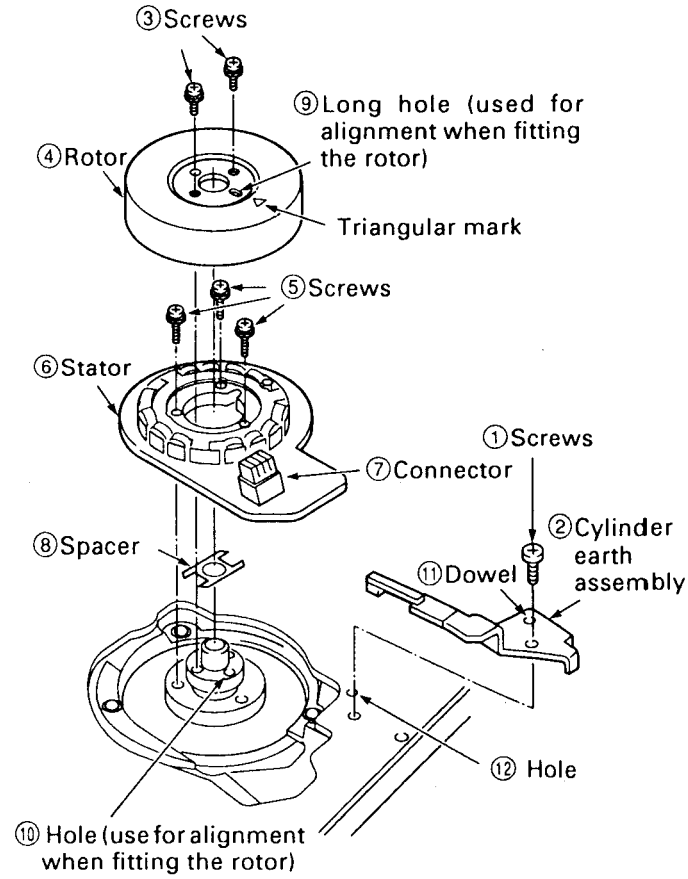


Fig.3-5-6

3-5-4. CYLINDER ASSEMBLY (See Fig.3-5-7)

1) Refer to sections 3-5-2 and 3-5-3, and remove the cylinder unit, the rotor, and the stator.
2) Remove the three screws① and the cylinder assembly ②.

ASSEMBLY NOTES:

1. Be careful not to scratch or soil the top of the cylinder. After fitting the cylinder, clean the surface.
2. Align the cylinder assembly ② with the two dowels ④ on the cylinder mounting ③.
3. After fitting the cylinder assembly, do the tape path adjustment as instructed in section 4-3 and do the switching position adjustment of the servo circuit.

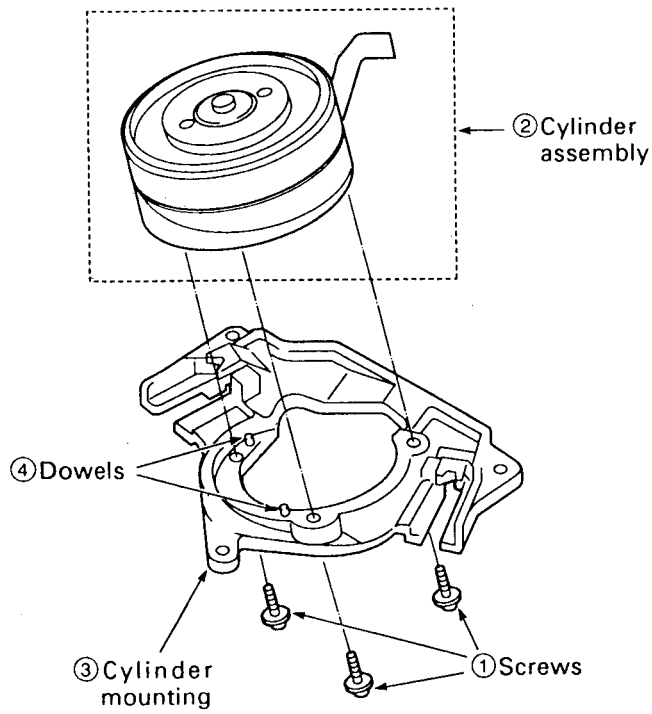


Fig.3-5-7

3-6. FE HEAD AND ACE HEAD

3-6-1. AUDIO R/P HEAD ASSEMBLY (ACE HEAD) (See Fig.3-6-1)

1) Unplug the connector from the audio R/P head assembly (ACE head).
2) Remove the two screws ① and the audio R/P head assembly (ACE head) ②.

ASSEMBLY NOTES:

1. Align the hole ③ on the audio R/P head assembly (ACE head) with the pin ④ on the chassis unit.
2. After assembly, check that the clamp ⑤ on the cleaner roller assembly has snapped into the mounting of the audio R/P head assembly (ACE head) ②.
3. After assembly, clean the surface of the head with a soft cloth or chamois.
4. After assembly, refer to section 4-3, and adjust the head height, the azimuth and the tracking (X) position.

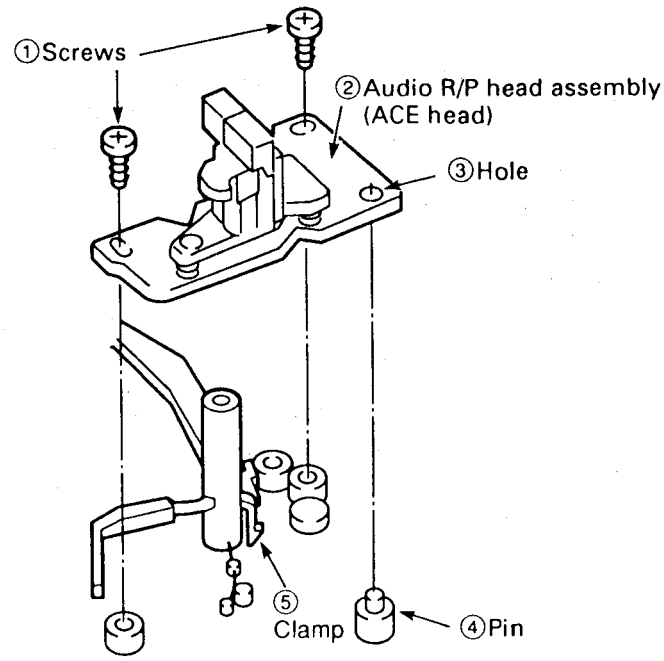


Fig.3-6-1

3-6-2. FULL ERASE HEAD (See Fig.3-6-2)

1) Unplug the connector from the full erase head ①.
2) Remove the screw ② and the full erase head ①.

ASSEMBLY NOTE:

1. After assembly, clean the full erase head ①.

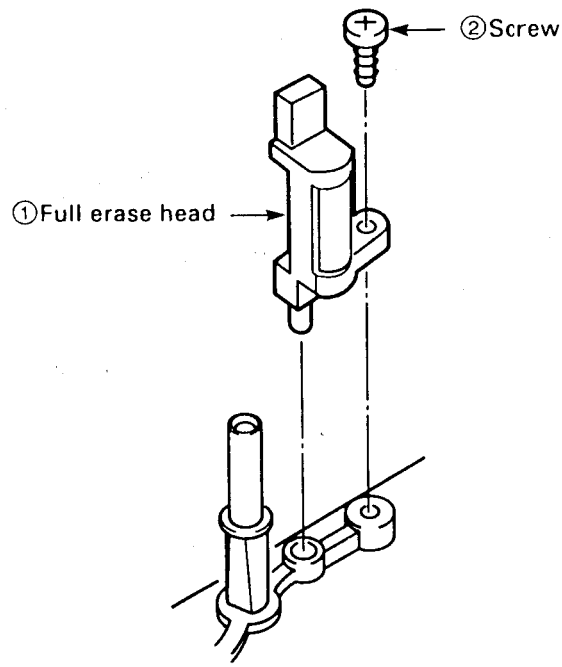


Fig.3-6-2

3-7. CAPSTAN MOTOR

3-7-1. CAPSTAN MOTOR (See Fig.3-7-1)

1) Refer to section 3-2, then remove the mechanism unit.
2) Remove the two screws ②, then remove the harness mounting ①.
3) Remove the reel belt ③.
4) Remove the three screws ⑤ and the capstan motor ⑥.

ASSEMBLY NOTES:

1. Check that connector ④ is inserted in the CP-1 PWB assembly.
2. When fitting the three screws ⑤, use the torque gauge screwdriver (VHJ-0014). Give the screws a tightening torque of 3.5 kg/cm.
3. After assembly, clean the capstan shaft with a soft cloth or chamois.

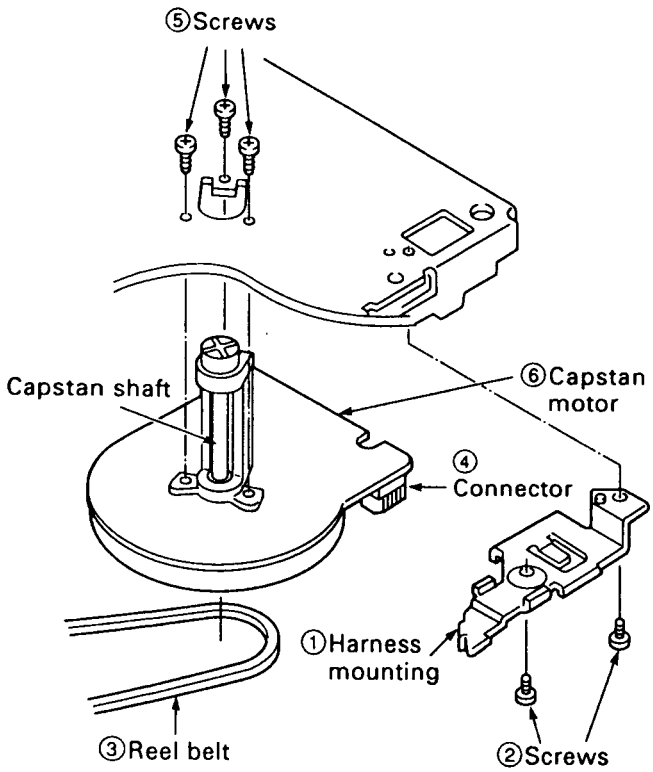


Fig. 3-7-1

3-7-2. CAPSTAN BRAKE ASSEMBLY (See Fig.3-7-2)

1) Remove the spring ①.
2) Remove the clamp ②, then remove the capstan brake assembly ③.

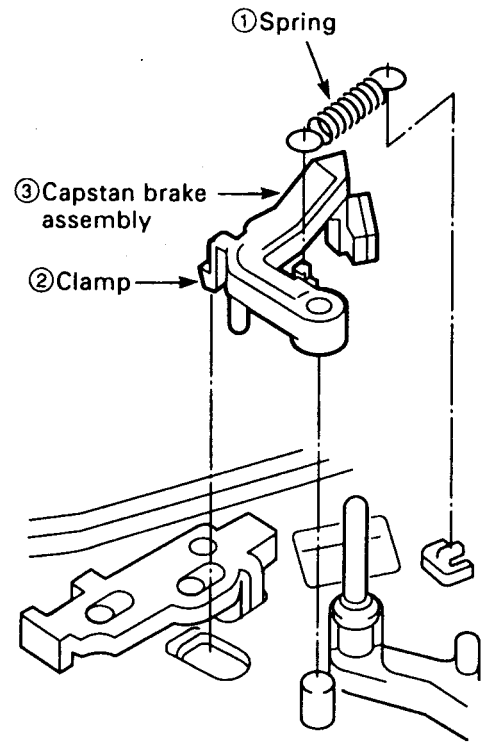


Fig.3-7-2

3-8. LOADING MOTOR ASSEMBLY AND WORM GEAR ASSEMBLY (See Fig.3-8-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the soldering on the lead wires② of the loading motor assembly from the MC-1 PWB assembly. When you do this, be careful not to let the soldering iron touch any other parts.
3) Press the clamp③, and remove the loading motor assembly① and the damper④. Be careful not to exert too much force on the clamp③.
4) Remove the worm gear assembly⑤. To maintain performance, do not dis-assemble the worm gear assembly⑤.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the teeth of the worm gear assembly.
2. Check that the clamps③ and⑥ are securing the loading motor assembly.
3. Check the polarity of the lead wires② (the orange wire is the positive terminal, and the gray wire is the negative terminal). After soldering the lead wires②, adjust them so that they do not touch the friction gear assembly.

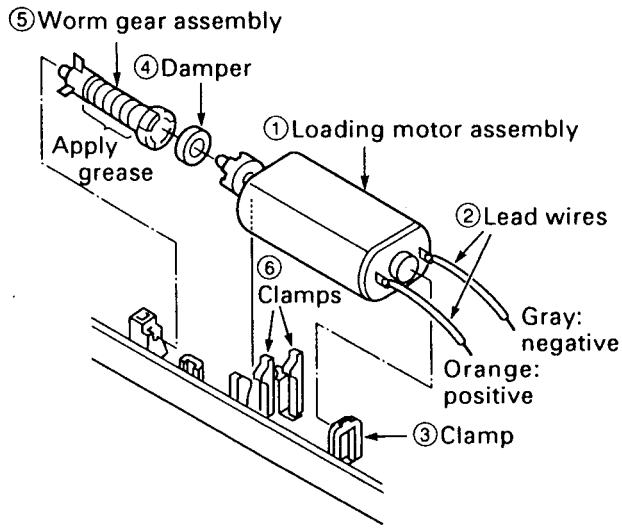


Fig.3-8-1

3-9. PINCH ROLLER PRESSURE MECHANISM

3-9-1. PINCH ROLLER LEVER ASSEMBLY (See Fig.3-9-1)

1) Remove the clamp①, then remove the pinch lift mounting②.
2) Remove the spring③, then remove the pinch roller lever assembly④ off the pinch lift mounting②. Before you do this, align the Indentation⑤ on the pinch roller lever assembly④ with the clamp⑥ on the pinch lift mounting②.

ASSEMBLY NOTE:

1. Be careful to keep the surface of the pinch roller free of dust and dirt.

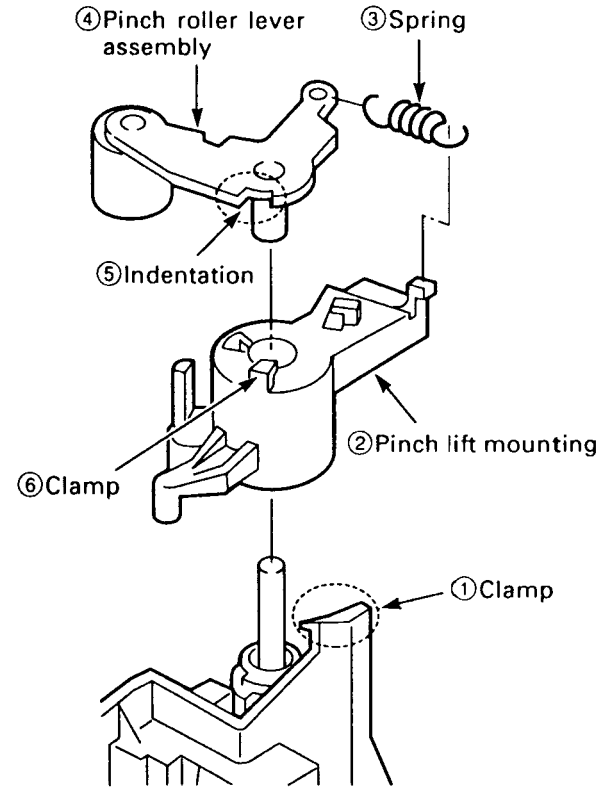


Fig.3-9-1

3-9-2. PINCH LIFT CAM AND PINCH CAM GEAR
(See Figs.3-9-2 and 3-9-3)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-9-1 and remove the pinch roller lever assembly.
3) After removing the screw ①, undo the three clamps ②, then remove the opener mounting ③.
4) Remove the clamp ④ and the pinch lift cam ⑤.
5) Remove the pinch cam gear ⑥.

ASSEMBLY NOTES:

1. Apply grease SGL-505 around the shaft ⑦, all over the teeth Ⓑ of the pinch cam gear ⑥, all over the teeth of the pinch lift cam ⑤, all over the cam grooves Ⓐ, and all over the "V Part Ⓒ" of the opener mounting ③ . Apply grease EM-L30LG to the outside of the shaft ⑧ and all over the top cam Ⓓ of the pinch cam gear ⑥.
2. Check that the positioning mark ⑩ on the mode switch ⑨ is aligned with the arrow ⑪ on the MC-1 PWB assembly, as shown in Fig.3-9-3. Then align the triangular mark ⑫ on the pinch cam gear ⑥ with the arrow ⑪ on the MC-1 PWB assembly. After that, align the round hole ⑬ on the pinch lift cam ⑤ with the indentation ⑭ on the pinch cam gear ⑥.
   If you have carried out the above alignments and the pinch roller will still not move up and down or perform the pressing movement correctly, refer to section 3-15 and check the alignment of the gear wheels 1 and 2, the main cam, and the mode switch.

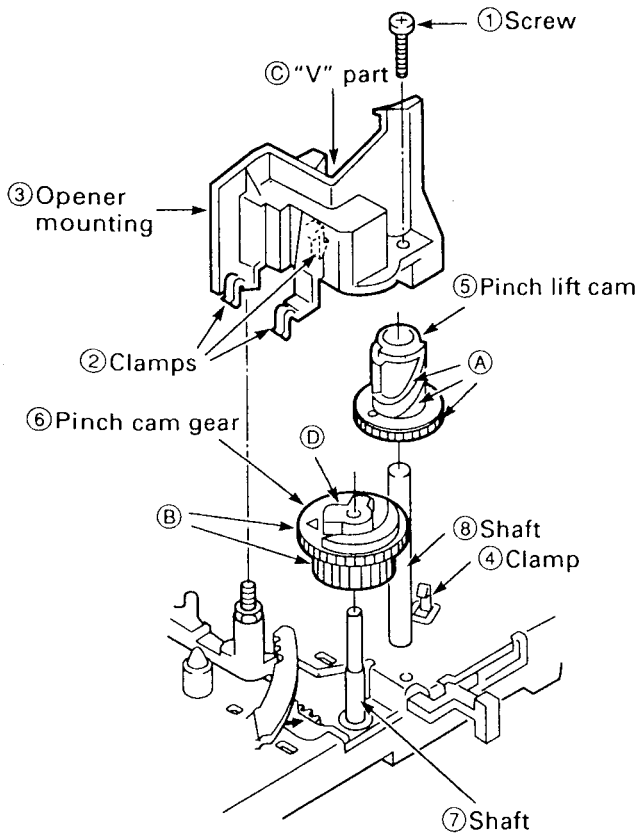


Fig.3-9-2

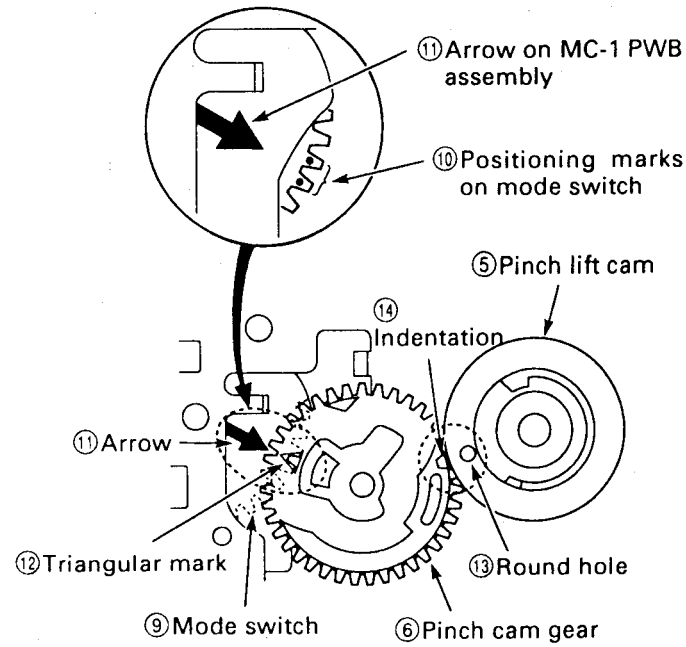


Fig.3-9-3

3-10. L GUIDE LEVER ASSEMBLY AND LOAD LEVER ASSEMBLY (See Figs.3-10-1)

1) Refer to section 3-3 and remove the cassette mechanism assembly.
2) Refer to sections 3-9-1 and 3-9-2, then remove the pinch roller lever assembly and the opener mounting.
3) After removing the washer ④, remove the L guide act lever assembly ⑤.
4) Remove the special nut ⑥, then remove the load lever assembly ⑦ and the L guide lever spring ⑧.

ASSEMBLY NOTES:

1) Apply grease SGL-505 to the toothed area Ⓐ of the L guide act lever assembly ⑤ and around the shafts ⑨ and ⑩.
2) Refer to section 4-3 and adjust the height of the load lever assembly.
3) Hook the L guide lever spring ⑧ into the stopper ⑬ and load lever assembly ⑦ shown in Fig. A.
4) Put the pin ⑪ of the L guide act lever assembly into the cam groove ⑫ of the crescent slide.

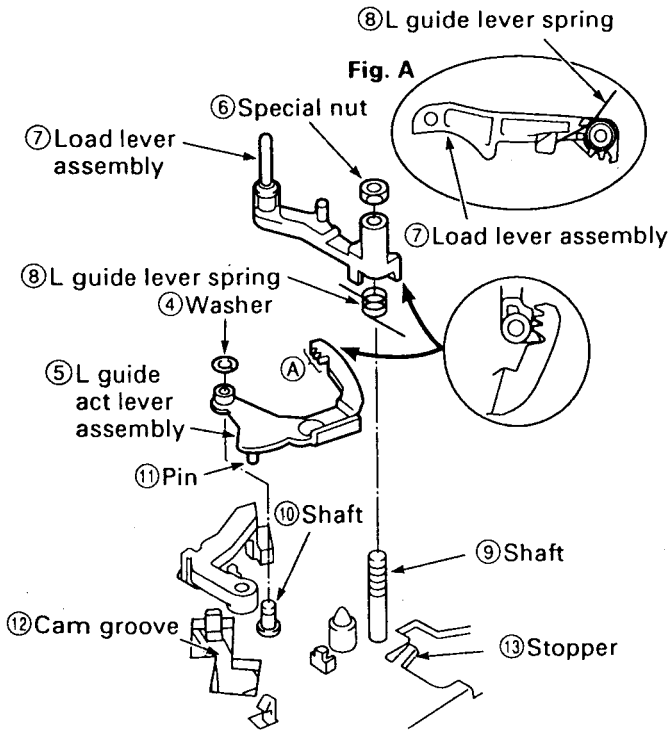


Fig.3-10-1

3-11. BT LEVER ASSEMBLY (See Fig.3-11-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Remove the BT spring ①.
4) Remove the clamp ② on the underside of the mechanism chassis, then remove the BT lever assembly ③.
5) Remove the clamp ⑤ on the band brake assembly ④. Then, as shown in Fig. A, align the other end of the band brake assembly with the protruding parts of the BT lever assembly ③ before removing it.

ASSEMBLY NOTES:

1. When fitting the BT lever assembly ③, be careful not to bend the stopper ⑥ or the S incline mounting assembly ⑦ out of shape by knocking it against them.
2. Hook the long hook of the BT spring ① into the BT lever assembly ③, as shown in Fig. B.
3. After assembly, make sure that the mountings on both ends of the band brake assembly ④ are positioned as shown in Fig. C.
4. After assembly, refer to section 4-2-1, and make the appropriate adjustment.

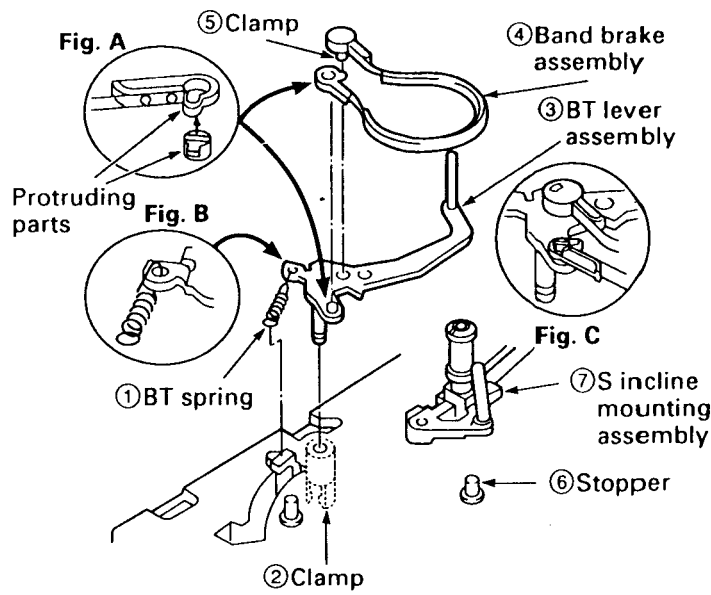


Fig.3-11-1

3-12. REEL DRIVE MECHANISM

3-12-1. REEL BELT, REEL PULLEY, FRICTION GEAR ASSEMBLY AND CLUTCH CHANGE LEVER (See Fig.3-12-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Remove the reel belt ① from the reel pulley ②.
3) Take off the washer ③ and remove the reel pulley ②.
4) Take off the washer ④ and remove the friction gear assembly ⑤.
5) Remove the clutch change spring ⑥.
6) remove the clamp ⑦ gripping the top of the mechanism chassis, then remove the clutch change lever ⑧.

ASSEMBLY NOTES:

1. After cleaning the shafts ⑨ and ⑩, apply a drop of oil NT-68 to each.
2. Be careful not to get any grease on the reel belt ①.

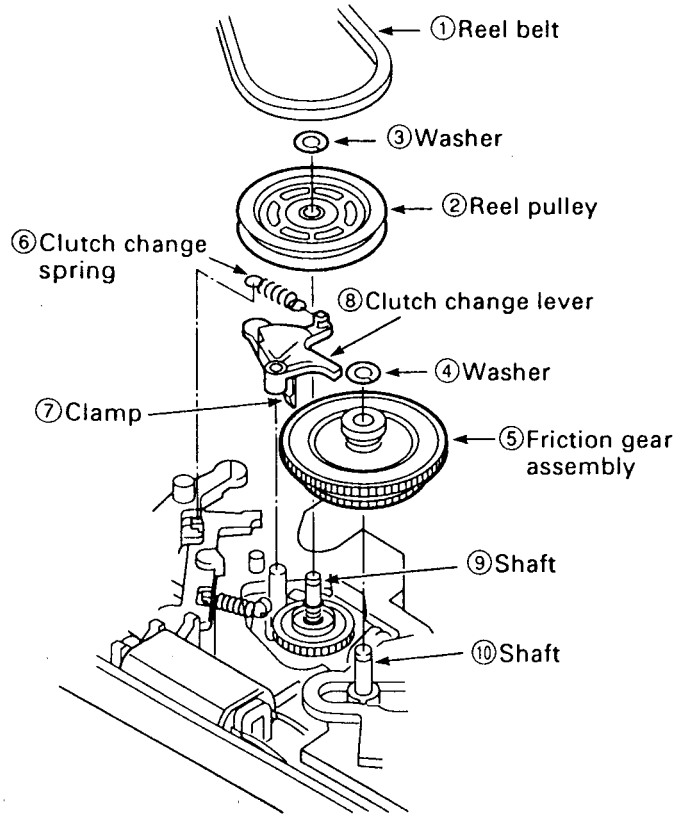


Fig.3-12-1

3-12-2. CLUTCH MOUNTING ASSEMBLY (See Fig.3-12-2)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Refer to section 3-12-1 and remove the reel pulley.
3) Remove the two screws ①, then remove the clutch mounting assembly ②.

ASSEMBLY NOTES:

1. Align the two holes ③ with the shafts ④ and ⑤. Be careful not to press part A of the clutch mounting assembly ② against the band brake assembly.
2. After assembly, make sure that the clamp on the clutch change lever has snapped into the chassis.

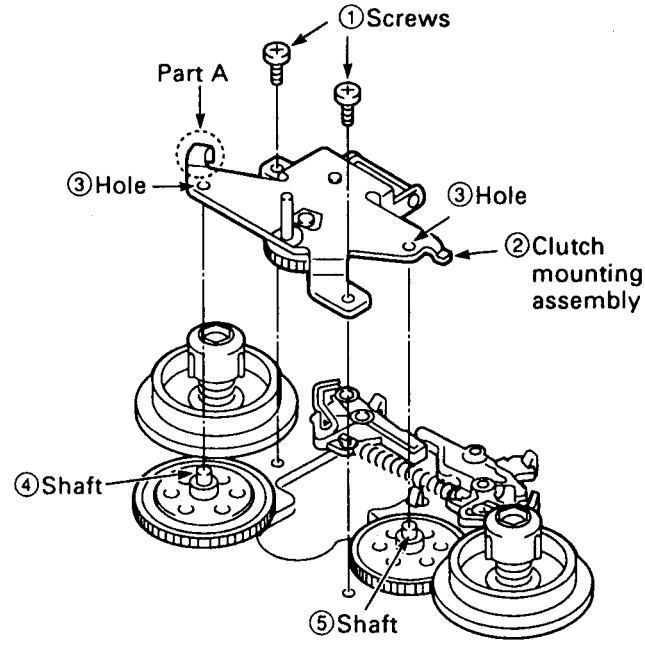


Fig.3-12-2

3-12-3. S SOFT LEVER, SUPPLY REEL ASSEMBLY AND S REEL GEAR (See Fig.3-12-3)

1) Remove the S soft spring ①.
2) Remove the clamp ②, then remove the S soft lever ③.
3) Refer to section 3-12-2 and remove the clutch mounting assembly.
4) Refer to section 3-11 and remove the band brake assembly, then remove the supply reel assembly ④ and the S reel gear ⑤.

ASSEMBLY NOTES:

1. After cleaning the shafts ⑥ and ⑦, apply a drop of oil NT-68 to each.
2. After assembly, clean the side of the supply reel assembly ④.

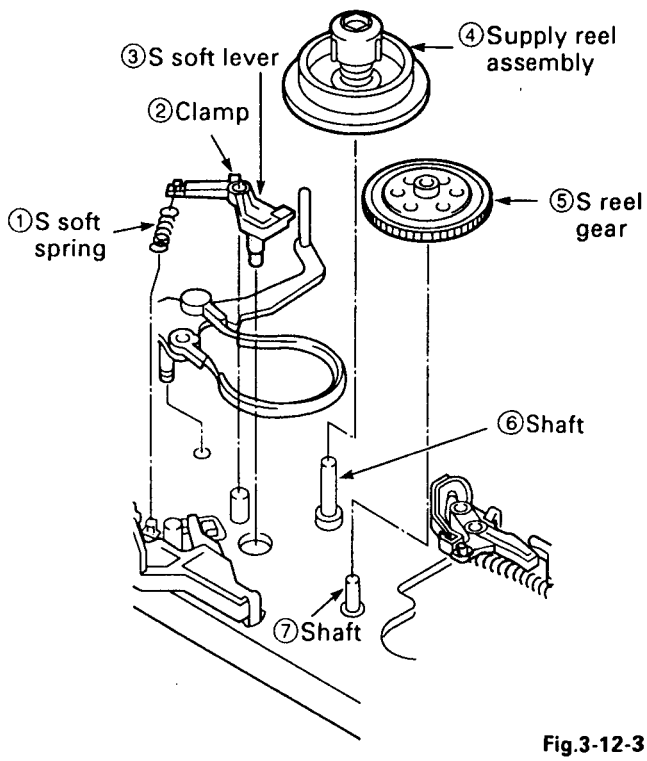


Fig.3-12-3

3-12-4. T SOFT BRAKE ASSEMBLY, TAKE UP REEL ASSEMBLY, T REEL GEAR (See Fig.3-12-4)

1) Remove the T soft spring ①.
2) Remove the clamp ②, then remove the T soft brake assembly ③.
3) Refer to section 3-12-2 and remove the clutch mounting assembly.
4) Pressing the T brake assembly ④ in the direction of the arrow, remove the take up reel assembly ⑤ and the T reel gear ⑥.

ASSEMBLY NOTE:

1. After cleaning the shafts ⑦ and ⑧, apply a drop of oil NT-68 to each.

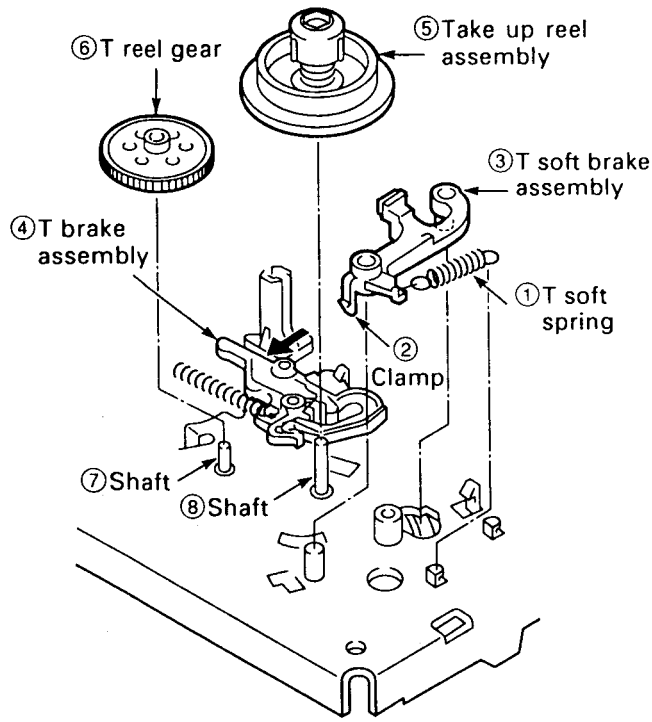


Fig.3-12-4

3-13. BRAKES

3-13-1. S BRAKE ASSEMBLY, T BRAKE ASSEMBLY, T BRAKE ACT SLIDE (See Fig.3-13-1)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove the two clamps ①, then remove the T brake act slide ②. (Note: You can remove the S brake assembly ⑦ and the T brake assembly ⑤ without removing the T brake act slide ②.)
3) Remove the brake spring ③.
4) Remove the two clamps ④ simultaneously, then remove the T brake assembly ⑤.
5) Remove the clamp ⑥, then remove the S brake assembly ⑦.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the shafts ⑧ and ⑨.
2. When fitting the T brake act slide ②, align the mark ⑩ with the shaft ⑪.

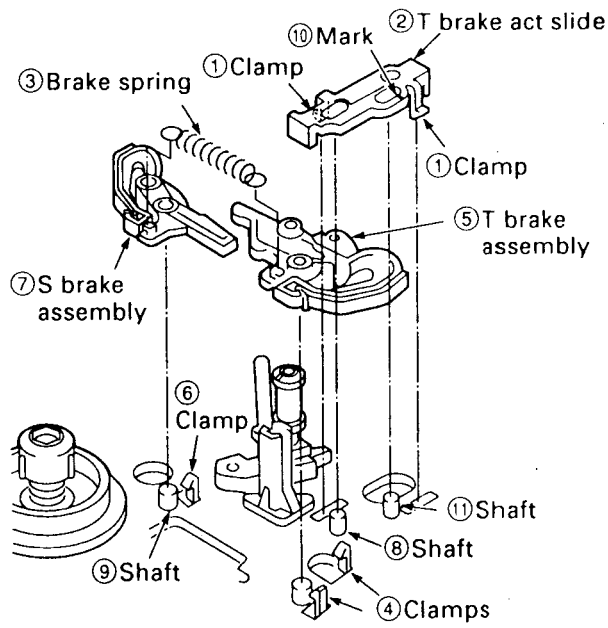


Fig.3-13-1

3-13-2. BRAKE CONTROL LEVER AND BRAKE ACT LEVER ASSEMBLY (See Fig.3-13-2)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-15 and remove the wheel gear 2.
3) Refer to sections 3-12-1, then remove the reel belt and the reel pulley.
4) Remove the clamp ①, then remove the wheel gear 1 ②.
5) Remove the clutch change spring ③.
6) Remove the clamps ④ and ⑤, then remove the brake control lever ⑥. Remove the clamp ④ on the topside of the mechanism chassis.
7) Remove the brake return spring ⑦.
8) Refer to section 3-8 and remove the worm gear assembly.
9) Remove the clamp ⑧ and clamp ⑤, then remove the brake act lever assembly ⑨. To maintain the performance of the brake act lever assembly ⑨, do not disassemble it.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the shafts ⑩ and ⑪, to the teeth of the wheel gear 1 ②, and to the pin ⑫ of the brake control lever ⑥.
2. Put the pin ⑬ of the brake control lever ⑥ into the cam groove ⑭ of the crescent slide.
3. Before fitting the wheel gear 1 ②, align the hole ⑮ with the hole ⑯ on the mechanism chassis.
4. Refer to section 3-15 and align the wheel gear 2.

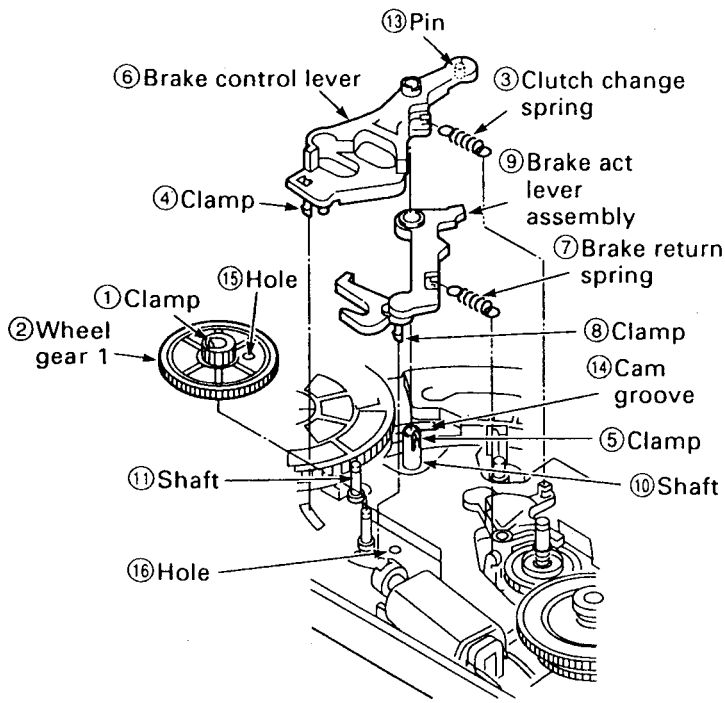


Fig.3-13-2

3-13-3. S BRAKE ACT SLIDE AND BT SPRING LEVER ASSEMBLY (See Figs.3-13-3 and 3-13-4)

1) Refer to section 3-16 and remove the crescent slide.
2) Refer to section 3-12-1 and remove the friction gear assembly.
3) Slide the S brake act slide ① in the direction of the arrow Ⓐ, then remove it.
4) Refer to section 3-11 and remove the BT spring.
5) Press the BT spring lever assembly ② until it touches the pin ③, then remove it.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the shaft ④ shown in Fig. 3-13-3, and to the BT spring lever assembly ② and the S brake act slide ① shown in Fig.3-13-4.
2. After mounting the BT spring lever assembly ② on the Shaft ④, hook the BT spring onto the clamp ⑤ and press it until it touches the pin ⑥.
3. Make sure that the clamps ⑦, ⑧ and ⑨ have snapped into the S brake act slide ①. Align the arrow ⑩ on the S brake act slide ① with the arrow ⑪ on the mechanism chassis.

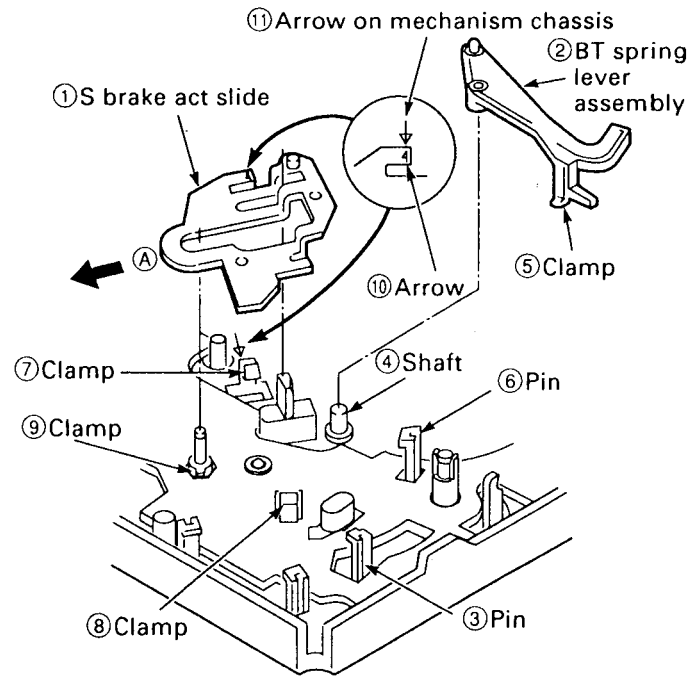


Fig.3-13-3

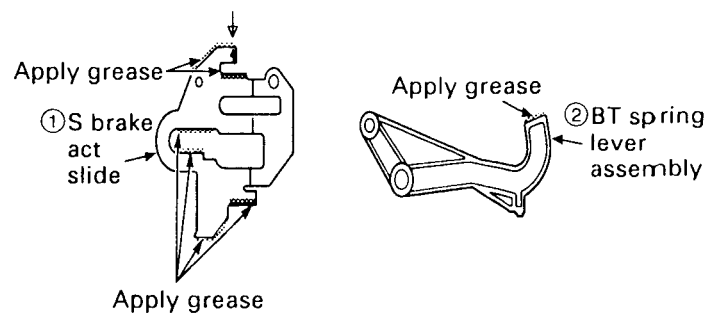


Fig.3-13-4

3-14. GUIDES

3-14-1. GUIDE ROLLER ASSEMBLY (See Fig.3-14-1)

1) Unscrew the two screws ①. When you do this, be careful not to damage the cylinder or the video head.
2) Remove the two guide roller assemblies ② by unscrewing them anticlockwise.

ASSEMBLY NOTES:

1. Tighten the two screws ① to a torque of 600 g/cm. After tightening, apply a screw-locking glue.
2. After replacing the parts, be sure to clean the guide roller and carry out tape path adjustment as described in section 4-3.

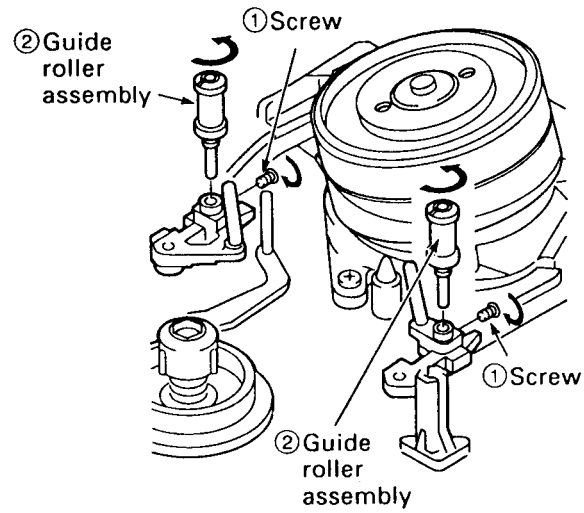


Fig.3-14-1

3-14-2. S AND T INCLINE MOUNTING ASSEMBLIES (See Fig.3-14-2)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-5-2 and remove the cylinder unit.
3) Refer to section 3-1 and rotate the loading motor in the PLAY direction until tape loading is completed.
4) *Shift the S incline mounting assembly ① slightly, in the direction of the arrow Ⓐ, then remove it from the S load lever assembly ②.
5) Shift the T incline mounting assembly ③ slightly, in the direction of the arrow Ⓑ, then remove it from the T load lever assembly ④.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the rail (top, underside and sides) on the mechanism chassis.
2. When fitting the S and T incline mounting assemblies ① and ③ into the rail, turn the loading motor manually in the EJECT direction. When tape unloading begins, watch out in case the S and T incline mounting assemblies ① and ③ get caught in the rail.
3. After replacing the parts, clean the cylinder and the roller guide, then adjust the tape path as described in section 4-3.

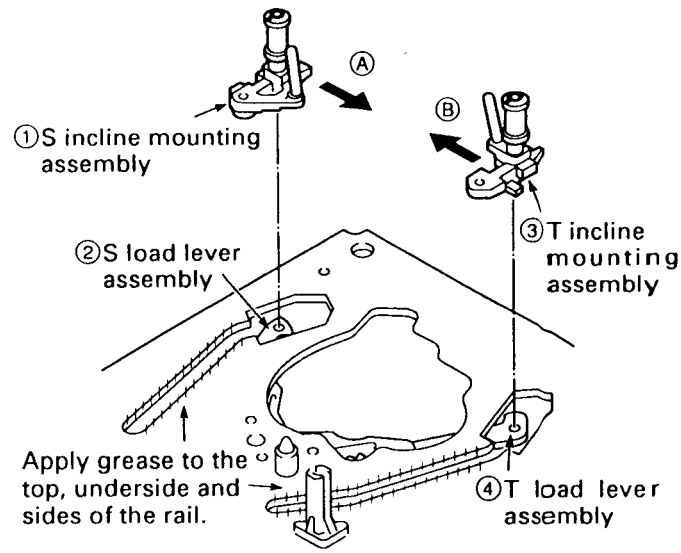

Ⓐ
Ⓑ
①S incline mounting assembly
②S load lever assembly
③T incline mounting assembly
Apply grease to the top, underside and sides of the rail.
④T load lever assembly

Fig.3-14-2

3-15. WHEEL GEAR 2, MAIN CAM AND MODE SWITCH (See Figs.3-15-1 and 3-15-2)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-7-1, then remove the harness mounting.
3) Remove the clamp①, then remove the wheel gear 2②.
4) Remove the washer③, then remove the main cam④.
5) After unscrewing the screw⑤, remove the soldering from the terminal of the mode switch⑥.
6) Remove the clamp⑦, then remove the mode switch⑥.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the shafts ⑧ and ⑨ and ⑩, to the teeth of the main cam④, and to the all over the cam groove of main cam④.
2. When fitting the mode switch⑥, align it in Ⓐ Ⓑ order as shown in Fig.3-15-2. The alignment of the part Ⓑ is shown in Fig. A. Position the teeth of the mode switch ⑥ so that the sixth tooth space left of part Ⓐ is aligned with the triangular mark on the pinch cam gear ⑪. After aligning part Ⓑ, refer to section 3-9-2 and check the positioning of the mode switch, the pinch cam gear and the pinch lift cam.
3. Beforehand, remove the soldering from the soldered part of the MC-1 PWB assembly, in order to prevent the mode switch ⑥ being warped. Solder the mode switch ⑥ after tightening the screw ⑤ (See Fig. 3-15-1).
4. Align the hole in the crescent slide⑫ with the hole in the mechanism chassis, as shown at point Ⓖ in Fig.3-15-2 (refer to section 3-16 and see the holes⑤ and⑥ in Fig.3-16-1).
5. When fitting the main cam④, position the mode switch⑥ and the front rack gear⑬ as shown at points Ⓒ and Ⓓ respectively in Fig.3-15-2.
6. When fitting the gear wheel 2②, position the main cam④ and the wheel gear 1⑭ as shown at points Ⓔ and Ⓕ respectively in Fig.3-15-2.

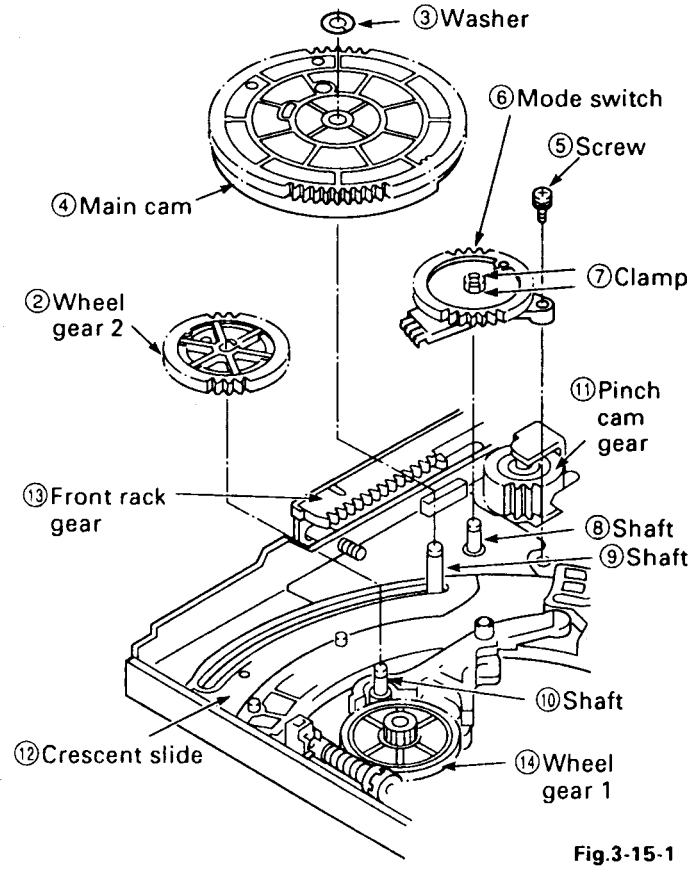


Fig.3-15-1

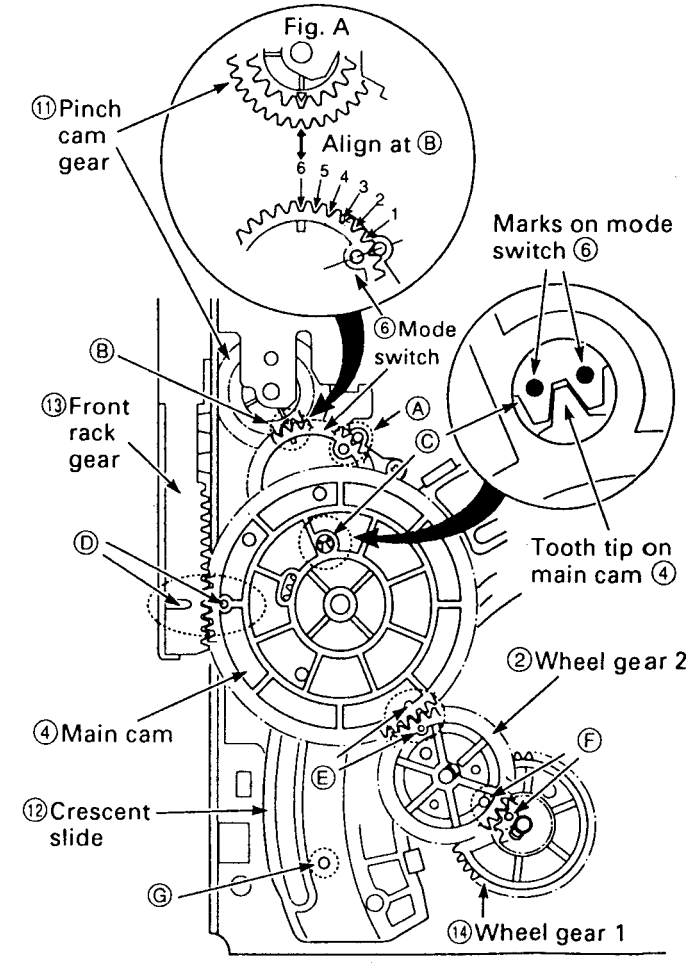


Fig.3-15-2

3-16. CRESCENT SLIDE
(See Figs.3-16-1 and 3-16-2)

1) Refer to section 3-2 and remove the mechanism unit. When you do this, make sure the mechanism is in EJECT mode.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Refer to section 3-7-2 and remove the capstan brake assembly.
4) Refer to section 3-12-4 and remove the T soft brake assembly.
5) Refer to section 3-13-1 and remove the T brake act slide.
6) Refer to section 3-12-1, then remove the reel belt and the reel pulley.
7) Refer to section 3-15, then remove the wheel gear 2 and the main cam.
8) Refer to section 3-13-2, then remove the wheel gear 1 and the brake control lever.
9) Remove the two screws ⑪, then remove the crescent mounting ⑫.
10) Remove the clamps ① and ②, then raise the right end of the crescent slide ③ slightly. Slide the crescent slide ③ to the right until it comes away from the clamp ④, then remove it.

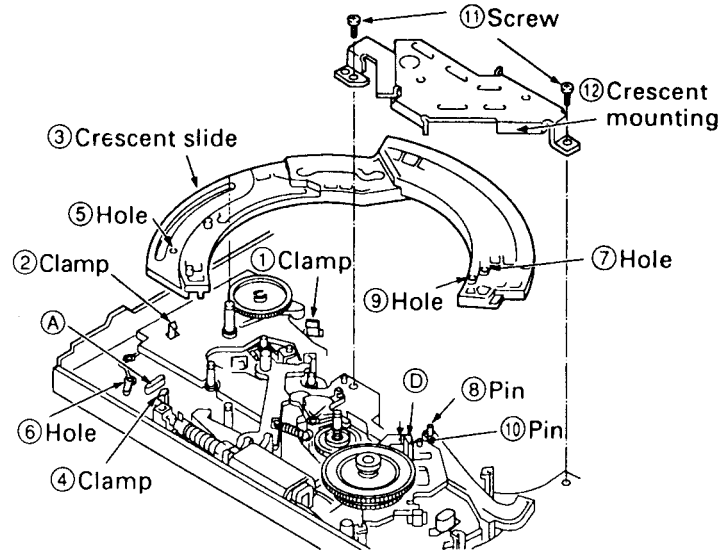


Fig.3-16-1

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the points Ⓐ, Ⓑ, Ⓒ and Ⓓ in Fig.3-16-1, and to the crescent slide ③ shown in Fig.3-16-2.
2. Before fitting the crescent slide ③, refer to section 3-13-3 and align the arrow on the S brake act slide with the arrow on the mechanism chassis. Then refer to Fig.3-17-3 and check that the S load gear and the T load gear have completed tape unloading.
3. When assembling the parts, raise the right side of the crescent slide ③ slightly, and keeping it in this position, slot the left side into the clamp ④, then align the hole ⑤ with the hole ⑥ in the mechanism chassis. When you do this, check that the hole ⑦ is aligned with the pin ⑧ on the BT spring lever assembly, and that the hole ⑨ is aligned with the pin ⑩ on the S brake act slide, before pressing the crescent slide ③ into place. Check that the clamps ①, ② and ④ are engaged.
4. After assembly, check that each lever and each brake is working properly.

Apply grease to the areas shown in ▭
• The places marked by dots should be greased particularly generously.

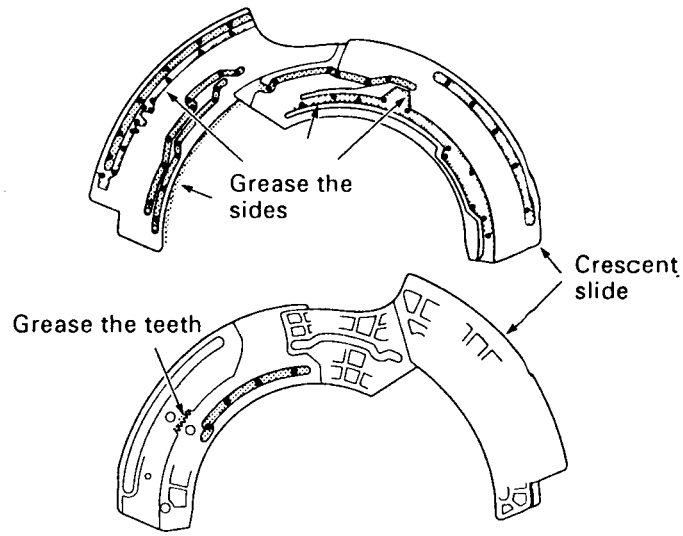


Fig.3-16-2

3-17. S LOAD GEAR, T LOAD GEAR, S LOAD LEVER ASSEMBLY AND T LOAD LEVER ASSEMBLY (See Figs.3-17-1, 3-17-2 and 3-17-3)

1) Refer to section 3-16 and remove the crescent slide.
2) Refer to section 3-14-2 and remove the S and T incline mounting assemblies.
3) Remove the clamp ①, then remove the components: the S load gear ②, the S load spring ③ and the S load lever assembly ④. When you do this, be careful not to damage the clamp ①, which can be damaged easily. Again, be careful when you disassemble the components, as the S load spring ③ will spring out.
4) Remove the following components: the T load gear ⑤, the T load spring ⑥, and the T load lever assembly ⑦. Be careful when you disassemble the components, as the T load spring ⑥ will spring out.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the shafts ⑧, ⑨ and parts A shown in Fig.3-17-1. Then apply grease, SGL-505 to the parts shown in Fig.3-17-2.
2. When fitting the S load gear ② and the T load gear ⑤ align them in the tape-loaded state, as shown in Fig. A in Fig.3-17-3. Again, after completing tape-unloading on these gears, check that they are positioned as shown in Fig. B in Fig.3-17-3, then refer to section 3-14-2 and fit the S and T incline mounting assemblies.

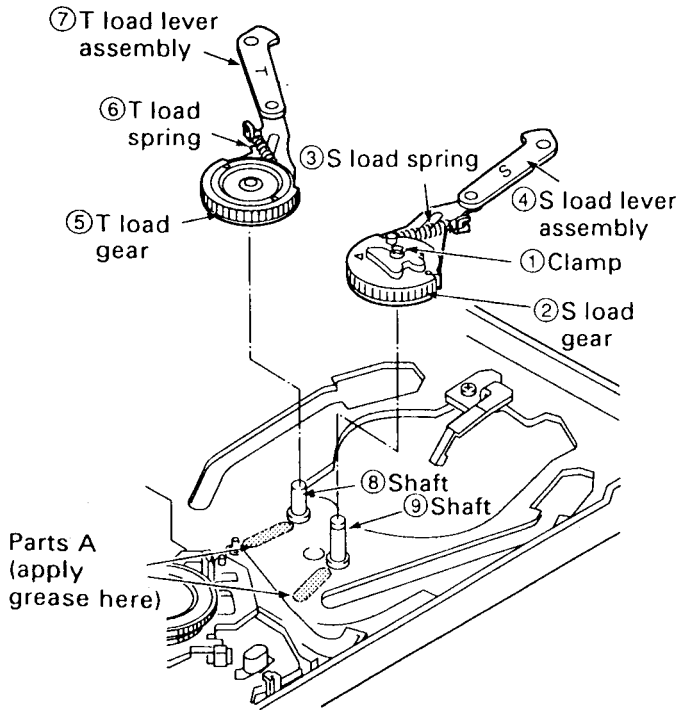
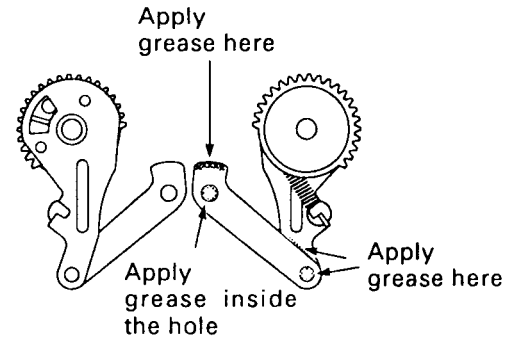


Fig.3-17-1

(T side)



(S side)

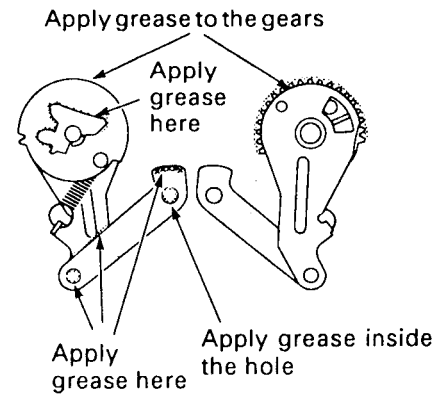


Fig.3-17-2

Fig. A: When tape loading is complete

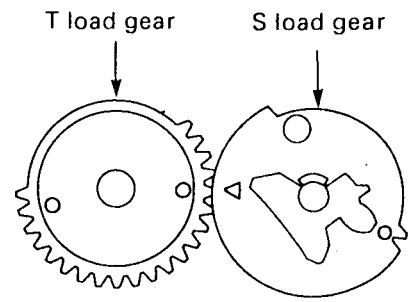


Fig. B: When tape unloading is complete

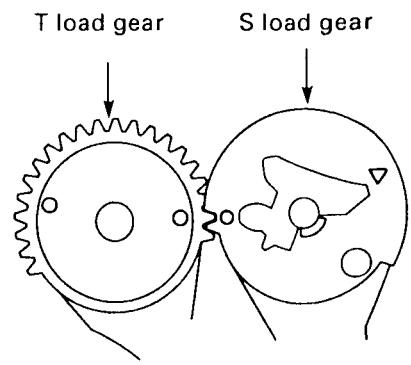


Fig.3-17-3

3-18. TAPE SENSORS, REEL SENSOR AND EP SW LEVER

3-18-1 TAPE TOP SENSOR AND TAPE END SENSOR (See Fig.3-18-1)

1) Refer to section 3-2 and remove the mechanism unit.
2) Refer to section 3-3-1 and remove the cassette mechanism assembly.
3) Remove the soldering from the MC-1 PWB assembly, then remove the photo diodes ①, ② and the LED ③. When removing the photo diode ② on the tape top sensor side, refer to section 3-15 and remove the main cam.

ASSEMBLY NOTES:

1. Fit the photo diodes ① and ② so that their photo-receptors to face the LED ③, as shown in Fig.3-18-1. Align the cuts in the LED ③ and the holder ④. Push the photo diodes ①, ② and the LED ③ as far down as they will go, so that they do not protrude above the top of their holders.
2. Do the soldering quickly.

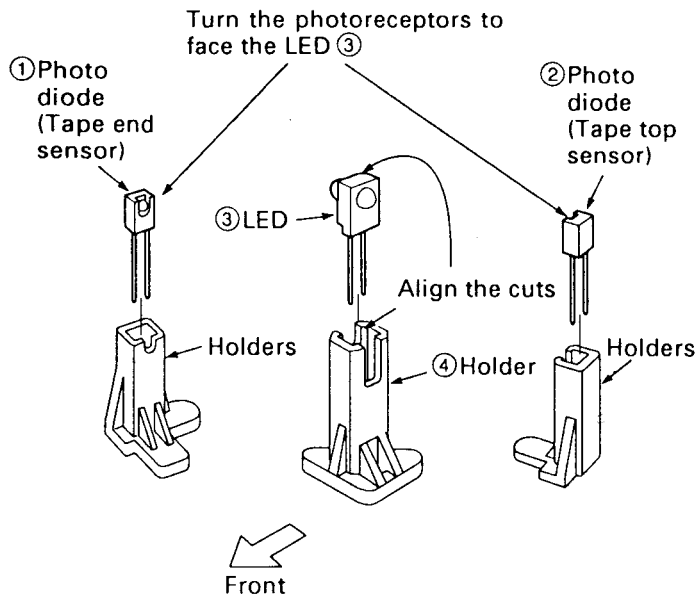


Fig.3-18-1

3-18-2. REEL SENSOR (See Fig.3-18-2)

1) Refer to sections 3-12-2 and 3-12-4, then remove the clutch mounting assembly, the T soft brake assembly and the take up reel assembly.
2) Refer to section 3-13-2, then remove the wheel gear 2, the wheel gear 1, and the brake control lever.
3) Remove the soldering from the MC-1 PWB assembly, then remove the photo diode (reel sensor) ①.

ASSEMBLY NOTES:

1. When assembling the parts, align the cut on the photo diode (reel sensor) ① with the protrusion on the mechanism chassis ②.
2. Do the soldering quickly.

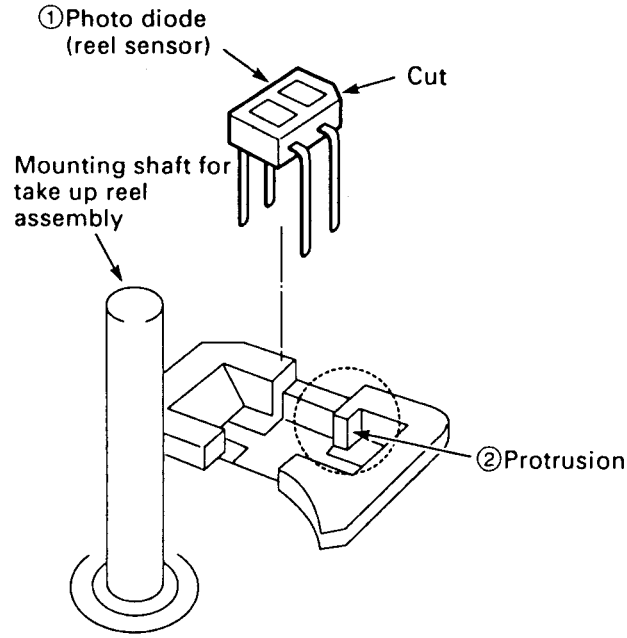


Fig.3-18-2

3-18-3. EP SWITCH LEVER (See Fig.3-18-3)

1) Refer to section 3-3-1 and remove the cassette mechanism assembly.
2) Remove the EP switch spring ①.
3) Remove the clamp ②, then remove the EP switch lever ③.

ASSEMBLY NOTES:

1. Apply grease SGL-505 to the protrusion ④ on the back of the EP switch lever ③.
2. After fitting the cassette mechanism assembly, check that in EJECT mode, the EP switch lever ③ does not touch the EP switch ⑤.

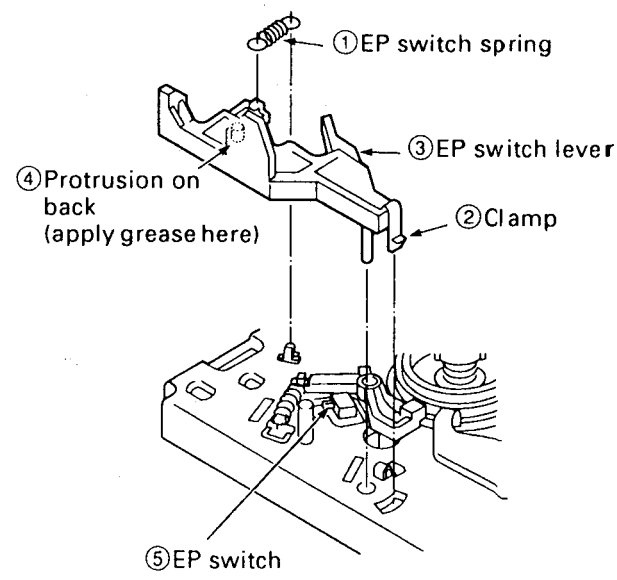


Fig.3-18-3

4. MECHANISM CHECKS AND ADJUSTMENTS

4-1. REEL TABLE TORQUE CHECK

1)With the power switch turned OFF, stick black vinyl tape over the photo diodes of the tape sensors. Then turn the power switch ON. Front loading will begin. Refer to section 3-2 and Fig.3-2-2, and release the locks of the tray lock lever and the lid opener lever.

NOTES:

1. The measurements must be taken without any incandescent light or daylight.

2. If the mechanism cannot be put into PLAY, FF or REW mode by the method described in 1) above, make a dummy cassette tape, as shown in Fig.4-1-2. The dummy cassette tape is made as follows: Unscrew the five screws on the underside, remove the reels, leaf springs and other parts on the supply and take up sides, make holes in the upper surface as wide as the reel diameter, then assemble the parts.

2) Put the mechanism into REW mode, wait at least 10 seconds, then measure the torque value of the reel table on the supply side. It should be at least 600 g/cm. Take the measurement with the torque gauge and torque gauge adaptor held in position in your hand (lock torque).
While taking the measurement, rotate the reel table (take up reel assembly) on the take up side with your hand so that the reel sensor does not respond.

3) After switching to FF mode, wait for at least 10 seconds and then measure the torque value of the reel table on the take up side. It should be at least 600g/cm (lock torque).

4) After switching to PLAY mode, wait for at least 10 seconds and then measure the torque value of the reel table on the take up side. It should be between 80 and 140g/cm (lock torque).

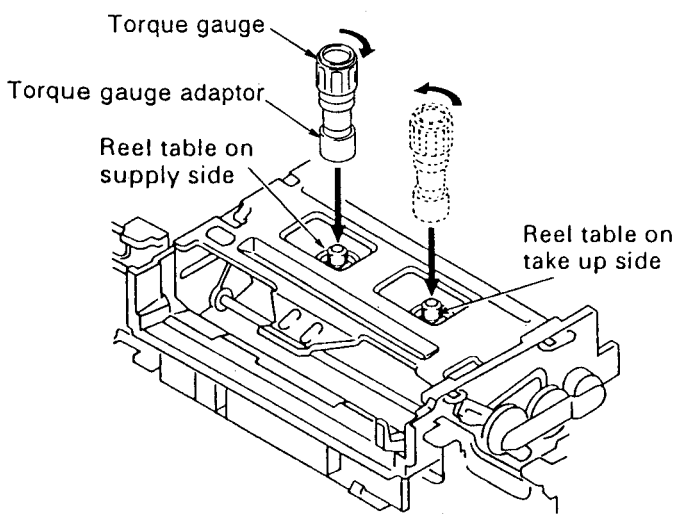


Fig.4-1-1

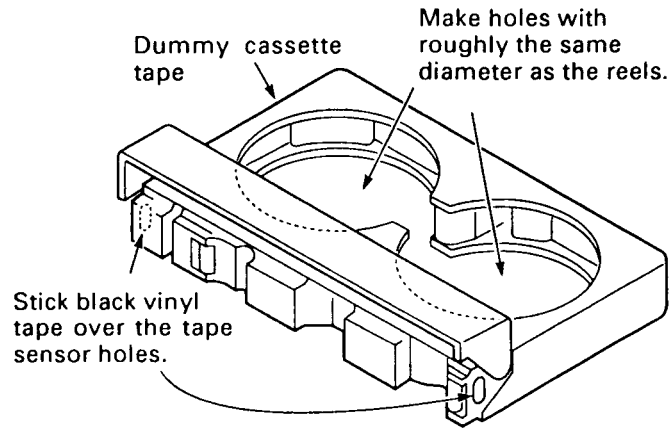

Dummy cassette tape
Make holes with roughly the same diameter as the reels.
Stick black vinyl tape over the tape sensor holes.

Fig.4-1-2

4-2. ADJUSTING THE BT LEVER ASSEMBLY POSITION AND CHECKING THE BACK TENSION TORQUE IN PLAY MODE

4-2-1. BT LEVER POLE POSITION ADJUSTMENT (See Fig.4-2-1)

1) Without loading a cassette tape, put the mechanism into PLAY mode (turn the power switch OFF).

2) Adjust point Ⓐ on the band brake assembly by rotating it so that the tip of the BT lever assembly is aligned with the line on the left side of the mechanism chassis.

3) Refer to section 4-2-2 and check that the back tension torque is between 30 and 50g/cm.

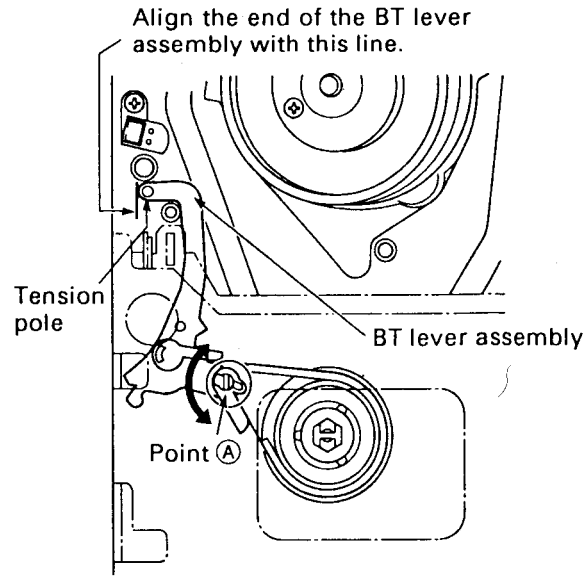


Fig.4-2-1

4-2-2. CHECKING THE BACK TENSION TORQUE PLAY MODE

1) Mount the cassette torque meter VHT-063S and switch to PLAY mode.

2) Check that the back tension torque is between 30 and 50g/cm.

4-3. TAPE PATH ADJUSTMENT

In normal circumstances, the tape path system does not need to be adjusted. However, after removing or replacing one of the parts shown in Fig.4-3-1, you should check and adjust the tape path. The adjustment of the tape path is carried out while monitoring the envelope waveform of the video head output, using an oscilloscope. To make sure that the tape drawn off the reel runs freely and without excessive tension along all the tape guides and cylinders (drums), it is also important to check each tape guide by eye.

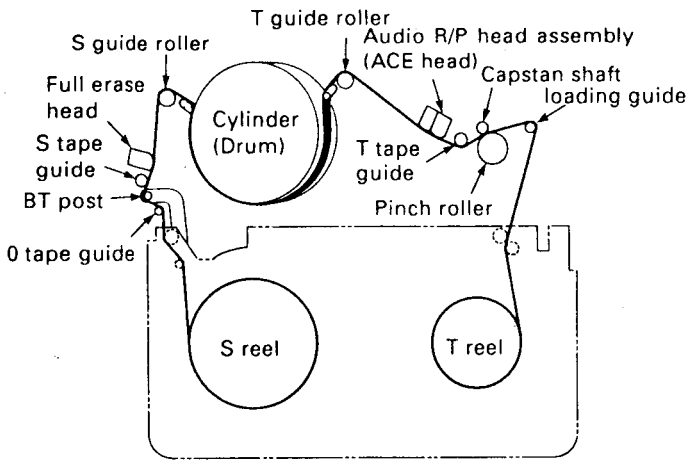


Fig.4-3-1

4-3-1. ADJUSTMENT PROCEDURE

1. Select a PAL or NTSC alignment tape or blank cassette tape, according to the transmission system of the VCR you are repairing.

NTSC: For models with 525 scanning lines and a field frequency of 60Hz

PAL: For models with 625 scanning lnes and a field frequency of 50Hz

2. Clean the tape guides, the cylinder (drum), the capstan Shaft, the audio R/P head (ACE head) and the full erase head.
3. Using an oscilloscope, adjust the height of the guide roller and carry out horizontal position adjustment,height adjustment and azimuth adjustment on the audio R/P head (ACE head). When observing the envelope waveform, bring the CH-1 probe into contact with the envelope waveform test point, and bring the CH-2 probe into contact with the switching pulse (SW P) test point. While adjusting the tape path, set the trigger at the low side of the switching pulse (SW P) in order to observe the output waveform on the CH-1 side of the video head.

NOTE:The contact point for the oscilloscope varies from one model to another, so to find the correct point for your model, refer to the figure entitled "Test point for tape path adjustment" in the electrical circuit section of the service manual.

4. When checking the tape path by eye, use a dental mirror.

4-3-2. LOAD LEVER ASSEMBLY HEIGHT ADJUSTMENT (See Fig.4-3-2)

1. Refer to sections 3-9-2, and remove the opener mounting .
2. Position the height adjustment tool (VHJ-0102)③ under the full surface of the protrusion ② on the load lever assembly ①, as shown in Fig.4-3-2.
3. Using your fingers, gently screw the adjustment nut ④ clockwise into the nut box (VHJ-0048) ⑤ until the protrusion ② of the load lever assembly① touches the height adjustment tool (VHJ-0102)③ and the screw starts to feel tight. Next, loosen the adjustment nut ④ by 270° anticlockwise.
4. Load a cassette tape (NTSC: T-160, PAL: E-240) and switch to PLAY mode. Check that when you do this, no scratches appear on the upper or lower edges of the tape. If scratches do appear, re-adjust the height.

Arrange the equipment so that the whole surface of the projection on the load lever assembly is positioned over the height adjustment tool (VHJ-0102) when seen from directly overhead.

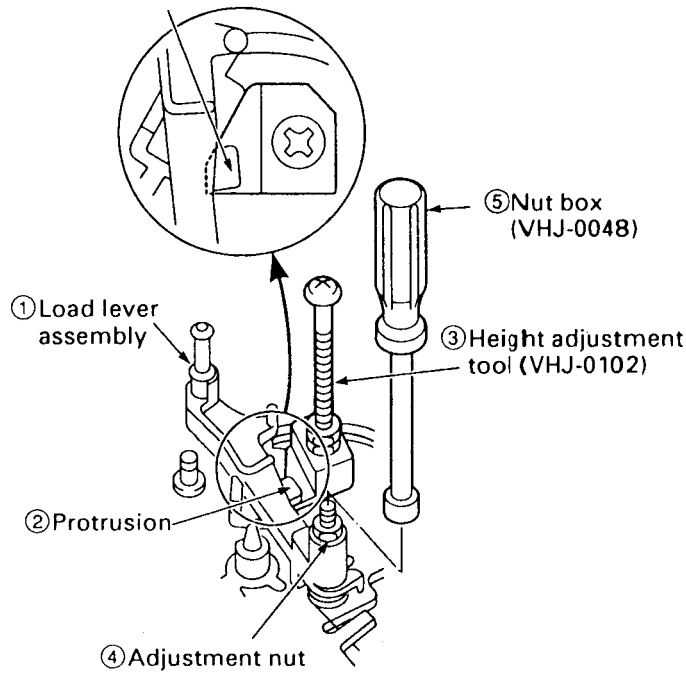


Fig.4-3-2

4-3-3. GUIDE ROLLER HEIGHT ADJUSTMENT (See Figs.4-3-3 and 4-3-4)

1) Play the alignment tape (NTSC : MH-1, PAL : MH-2) and check that the envelope waveform is at its maximum at the tracking centre. Then, after loosening the S guide roller and the T guide roller by rotating them anticlockwise, tighten them in turn until the envelope waveform becomes flat. If the envelope waveform is not at its maximum at the tracking centre, refer to section 4-3-4 and carry out a rough adjustment of the horizontal position of the audio R/P head (ACE head) before adjusting the guide rollers.
2) Adjust the S guide roller.
   ① Press the tracking button (Channel –), and check whether, when the envelope waveform has reached 50% of its maximum, the front half of the envelope waveform is flat. If not, fine-tune the S guide roller as follows.
   a. If the front half of the envelope waveform is as shown in Fig.4-3-4 (a), this means that you have pressed the S guide roller too far. Therefore, loosen it slightly, and when it is in the state shown in Fig.4-3-4 (b), tighten it again, stopping when the envelope waveform is flat.
   b. If the front half of the envelope waveform is as shown in Fig.4-3-4 (b), this means you have not pressed the S guide roller far enough. Therefore, tighten it slightly, stopping when the envelope waveform becomes flat.
   c. If the front half of the envelope waveform is as shown in Fig.4-3-4 (c), it may happen that when you tighten the S guide roller, the wrapper waveform does not disappear, but sinks into the flat part, as shown in Fig.4-3-4 (d). If this happens, the status shown in Fig.4-3-4 (c) is normal, so loosen the S guide roller, then tighten it again until the envelope waveform is as shown in Fig.4-3-4 (c).
   ② Check that at the tracking centre, the output of the front half of the envelope waveform is not less than 80% of the maximum.
   ③ Rotate the S guide roller 20° anticlockwise.
3) Adjust the T guide roller.
   ① Press the tracking button (channel –) and check whether, when the envelope waveform is 50% of maximum, the back half of the envelope waveform is flat. If not, loosen the T guide roller slightly, then tighten it gradually until the back half of the envelope waveform becomes flat.
   ② Check that the output for the back half of the envelope waveform is at its maximum at the tracking centre.
4) Check that the envelope waveform does not fluctuate when you switch from F-SEARCH to PLAY or from R-SEARCH to PLAY. If it does fluctuate, repeat steps 3) and 4).

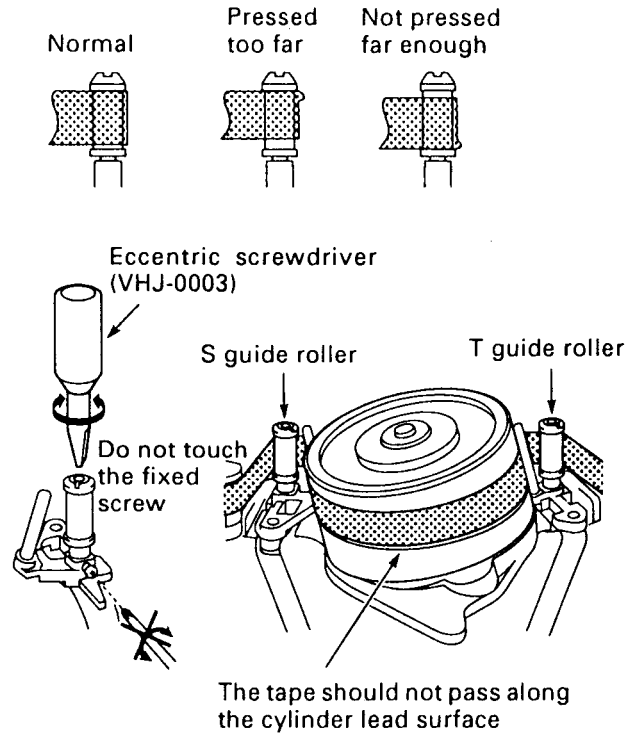

Normal
Pressed too far
Not pressed far enough
Eccentric screwdriver (VHJ-0003)
S guide roller
T guide roller
Do not touch the fixed screw
The tape should not pass along the cylinder lead surface

Fig.4-3-3

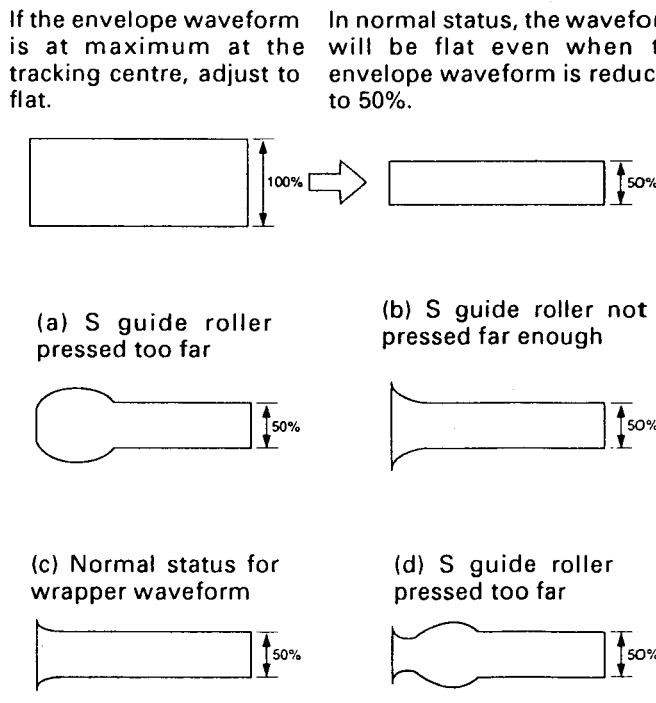

If the envelope waveform is at maximum at the tracking centre, adjust to flat.
In normal status, the waveform will be flat even when the envelope waveform is reduced to 50%.
100%
50%
(a) S guide roller pressed too far
(b) S guide roller not pressed far enough
50%
50%
(c) Normal status for wrapper waveform
(d) S guide roller pressed too far
50%
50%

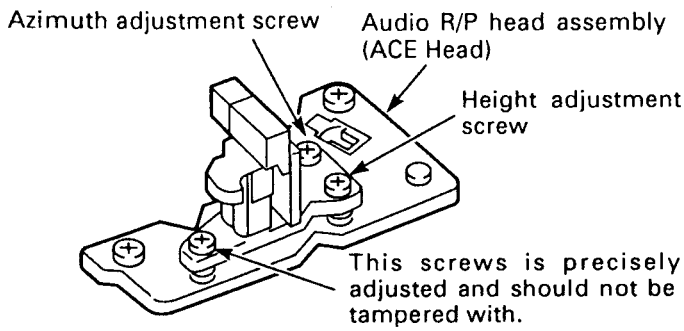
Fig.4-3-4

4-3-4. AUDIO R/P HEAD (ACE HEAD) HEIGHT ADJUSTMENT, AZIMUTH ADJUSTMENT AND HORIZONTAL POSITION ADJUSTMENT

(1) Azimuth adjustment (See Fig.4-3-5)

1) Play the alignment tape (NTSC : MH-1, PAL : MH-2)and obseve the waveform of the audio output, using an oscilloscope.
2) Loosen the height adjustment screw in the counter-clockwise direction and decrease the amplitude of the audio output waveform. In this state, tighten the screw in the clockwise direcion and maximize the amplitude. Slightly tighten the screw further in the clockwise direction and decrease the amplitude, and then loosen it slowly in the counterclockwise direcion until the amplitude starts to reach the maximum.
3) Set the amplitude of the audio output waveform to maximum by rotating the azimuth adjustment screw.
4) Make sure that the tape edge is running between the top of the audio head and the bottom of the control head.
   Gaps A and B should be roughly equal.

NOTE:Rotate the adjustment screw with a slotted screwdriver. Do not apply excessive force vertically. As the height adjustment screw also adjusts tilt, rotate it slowly. Do not rotate it excessively. And apart from the this screw, and height adjustmment screw, the screws is precisely adjusted before shipment from the factory, and should not be tampered with. Tampering with these screws can lead to scratching of the tape and other problems.


Azimuth adjustment screw
Audio R/P head assembly (ACE Head)
Height adjustment screw
This screws is precisely adjusted and should not be tampered with.

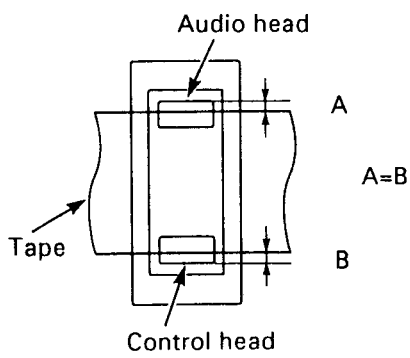


Fig.4-3-5

(2) Horizontal position adjustment (See Fig.4-3-6)

1) Play the Alignment Tape (NTSC : MH-1, PAL : MH-2).
2) Press the tracking buttons (channel + and channel –) simultaneously and set the tracking to the centre.
3) Using an oscilloscope, observe the waveform of the video head output.
4) Loosen the two fixed screws on the audio R/P head (ACE head) by between 20° and 30° anticlockwise.
5) Using a slotted screwdriver, adjust the position of the audio R/P head (ACE head). At the position where the amplitude of the envelope waveform is at its maximum at the tracking centre, tighten the fixed screw on the audio R/P head (ACE head). When you do this, check that the envelope waveform changes equally whether the tracking is shifted by pressing the tracking button in the plus or the minus direction.
6) Play the alignment tape (NTSC : MH-1, PAL : MH-2) and check that the amplitude of the envelope waveform is at its maximum at the tracking centre. If not, repeat steps 1) to 6).
7) Refer to the electrical adjustments section of the service manual, and adjust the switching position of the servo circuit.

NOTE:

1. When you press the tracking buttons (channel + and channel –) simultaneously, the tracking is reset to the tracking centre. When the tracking is at the tracking centre, the message "T - : - " will appear in place of the clock display on the front panel. If you keep pressing the channel – button the messages "T -: " and "T - -: " will appear, while if you keep pressing the channel + button, the messages "T : -" and "T : - - " will appear. Three seconds after you stop pressing the tracking buttons, the clock display will re-appear.
2. The check described in paragraph 6) is not necessary for models in which the only tape speed is SP mode.

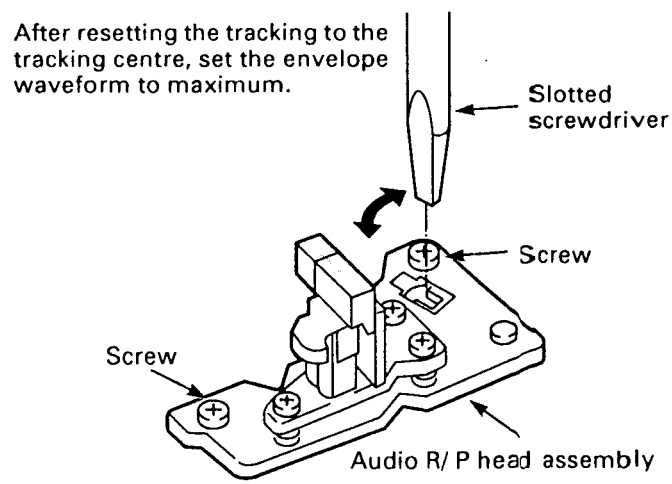

After resetting the tracking to the tracking centre, set the envelope waveform to maximum.
Slotted screwdriver
Screw
Screw
Audio R/ P head assembly

Fig.4-3-6

4-3-5. CHECKING AFTER ADJUSTMENT

1) Play the alignment tape (NTSC : MH-1, PAL : MH-2)and check that the envelope waveform is activated immediately and that there are no fluctuations in the envelope waveform or the audio output waveform.
2) Load a cassette tape (NTSC: T-120, PAL: E-180) and use it to record and replay. Check that the envelope waveform is activated immediately and that there are no fluctuations in the envelope waveform or the audio output waveform. (When recording on the tape, input 1kHz to the audio input terminal. Use a scratch-free cassette tape (NTSC: T-120, PAL: E-180).) Check that at the tracking centre, the front half down and back half down are not more than 20% of the value at the point where the envelope waveform amplitude is at its maximum.
3) Check that the envelope waveform is activated immediately when you switch from PLAY to R-SEARCH or from R-SEARCH to PLAY. Check that there is no slack in the tape next to the pinch roller.
4) Check that the envelope waveform is activated immediately when you switch to PLAY from FF, REW, F-SEARCH, R-SEARCH or STOP mode. Check that there is no slack in the tape next to the pinch roller.
5) Check that the tape is not curling or riding up on the upper or lower flanges of the tape guides in PLAY, FF, REW, F-SEARCH or R-SEARCH modes.
6) Check that in PLAY mode, the tape runs as shown in Fig.4-3-7.
7) Load a tape (NTSC: T-160, PAL: E-240) and play it back. carry out the checks described in steps 3) to 5) above.

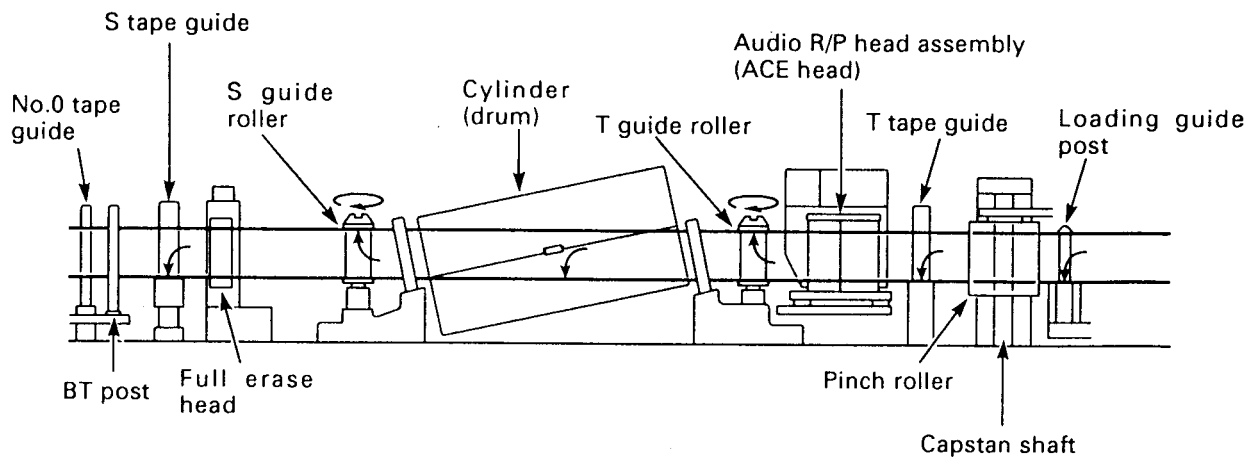
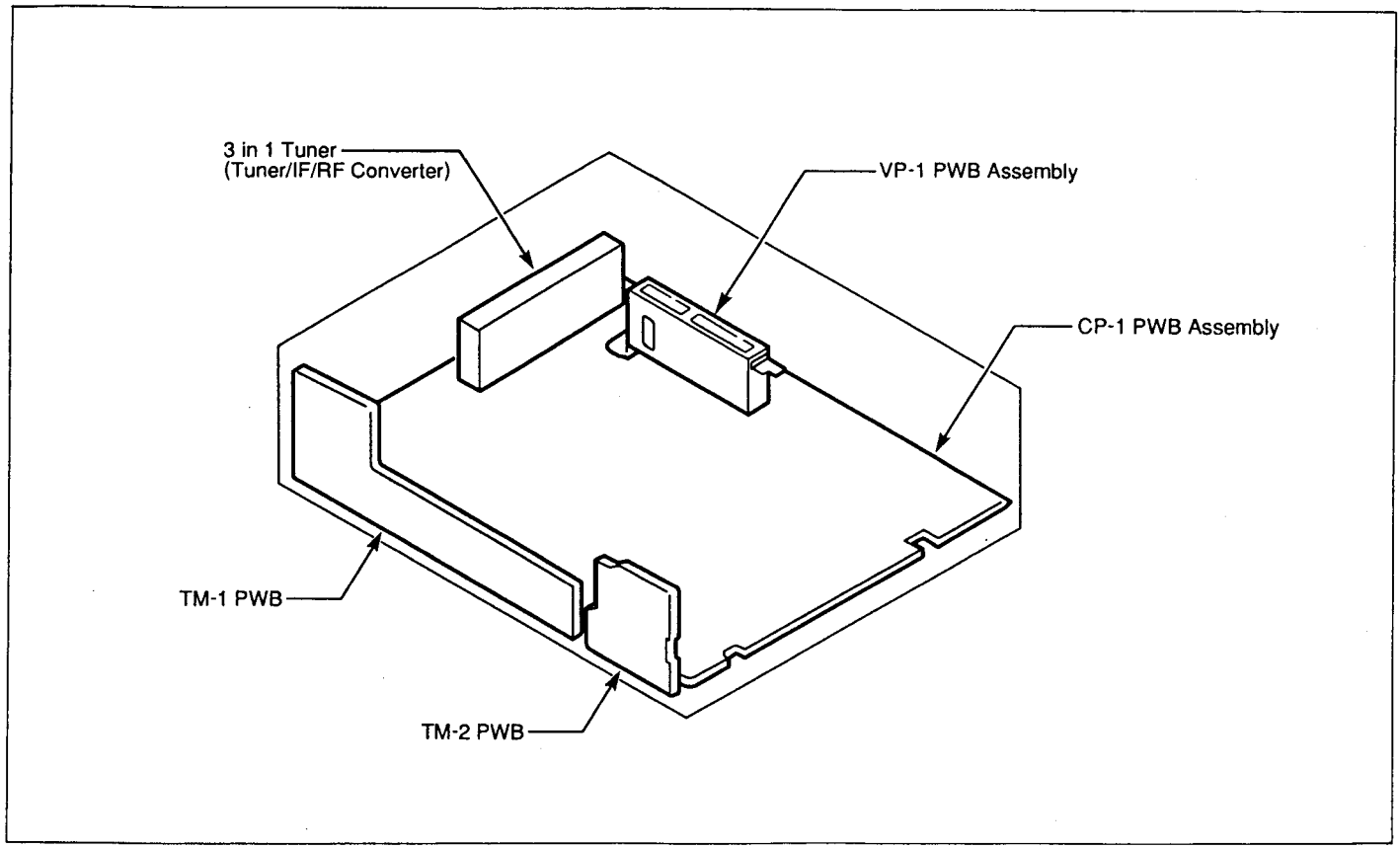


Fig.4-3-7

SECTION 6
ELECTRICAL ADJUSTMENTS

CIRCUIT BOARDS LOCATION

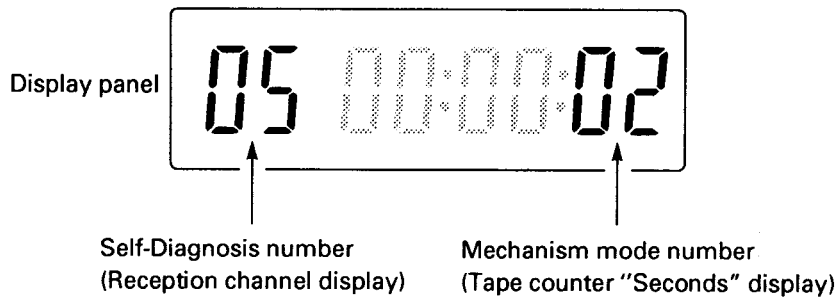


SELF-DIAGNOSIS DISPLAY

This unit displays the diagnosis contents of abnormalities and the mechanism mode on its display panel in 2-digit numbers. These display shows the outline of the problems. Use it as a reference when servicing the unit.

1. Self-Diagnosis Contents and Mechanism Mode Display

- When the STOP button on the remote control is pressed for about 10 seconds continuously, the self- diagnosis number will be displayed on the reception channel display of the display panel and number indicating the failed mechanism mode (changed mode when being shifted) on the tape counter "seconds" display for 10 seconds each.
- During self-diagnosis display, displays other than the diagnosis number/mechanism mode number will be turned off and when displays end, the normal display will be returned automatically.
- Refer to "Self-Diagnosis Contents" for the self-diagnosis numbers and the "Mechanism Mode Display Contents" for the mechanism mode numbers.
- When the "0" button on the remote control unit is pressed during display, and clearing the self-diagnosis display and mechanism mode display.



Self-Diagnosis Contents

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
00	There is no abnormality in the mechanism.		
01	The cylinder motor does not rotate.	• The cylinder motor is faulty. • The control of the cylinder motor is faulty. • The tape winds around the cylinder.	Shifts to the STOP mode.
02	The take-up reel does not rotate.	• The take-up reel is caught. • The reel belt is faulty. • The take-up torque has decreased.	Shifts to the STOP mode.
03	The capstan motor does not rotate.	• The capstan motor is faulty. • The control of the capstan motor is faulty.	Shifts to the STOP mode.
04	The tape cannot be loaded with the cassette inserted. (But unloading can be performed.)	• Error in the operations of the tape loading mechanism. • Foreign particles in the tape load-ing mechanism. • The tape end sensor is faulty. • The reel brake of the tape cassette has not been released.	Unloads, shifts to the INITIAL mode, and the power goes off.
05	Tape loading and unloading cannot be performed with the cassette inserted.	• The tape guide is caught. • The loading motor is faulty. • The control of the loading motor is faulty.	The power is forcibly turned off with the mechanism at its current position.

No.	Problem	Main Possible Cause	Mechanism Operations and State After Occurrence
06	Front unloading cannot be performed when ejecting the cassette. (Front loading can be performed.)	• The cassette drive mechanism is faulty. • The front door is caught.	Front loads and shifts to the STOP or INITIAL mode. • When the power switch is turned on before eject operations: Shifts to the STOP mode. • When the power switch is turned off before eject operations: Shifts to the INITIAL mode and the power goes off.
07	Front loading and front unloading cannot be performed when ejecting the cassette.	• The tape cassette is caught in the cassette drive mechanism. • The main cam and front rack gear of the front loading mechanism have not engaged properly. • The gears of the front loading drive mechanism have not engaged properly.	The power is forcibly turned off with the mechanism at its current position.
08	The mechanism becomes 1 (REVIEW) while moving from 2 (IDLER), 3(STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	The power is forcibly turned off with the mechanism at its current position.
09	The mechanism becomes 7 (INITIAL) while moving from 1 (REVIEW), 2 (IDLER), 3(STILL), 4 (BRAKE), and to 5 (STOP).	• The mechanism mode switch contact is faulty.	Carries out tape take-up operations, shifts to the INITIAL mode, and the power goes off.

Note: For details of mechanism operations corresponding to the mechanism positions of the self-diagnosis numbers 08 and 09 above, refer to the separate volume on the V95 I mechanism manual.
These manual reference numbers are shown in the cover.

Mechanism Mode Display Contents

Mode No.	Mechanism Mode	Mode No.	Mechanism Mode	Mode No.	Mechanism Mode
00	CASSETTE OUT	08	PLAY	16	VIDEO INSERT
01	STANDBY	09	REC	17	VIDEO INSERT – PAUSE
02	STOP	10	AUDIO DUBBING	18	AUDIO/VIDEO INSERT
03	STILL	11	X2 SPEED PLAY	19	REVERSE X2 SPEED PLAY
04	REC-PAUSE	12	CUE		
05	AUDIO DUBBING – PAUSE	13	REVIEW		
06	FRAME ADVANCE	14	FAST FORWARD		
07	SLOW	15	REWIND	99	OTHERS

2. ELECTRICAL ADJUSTMENT

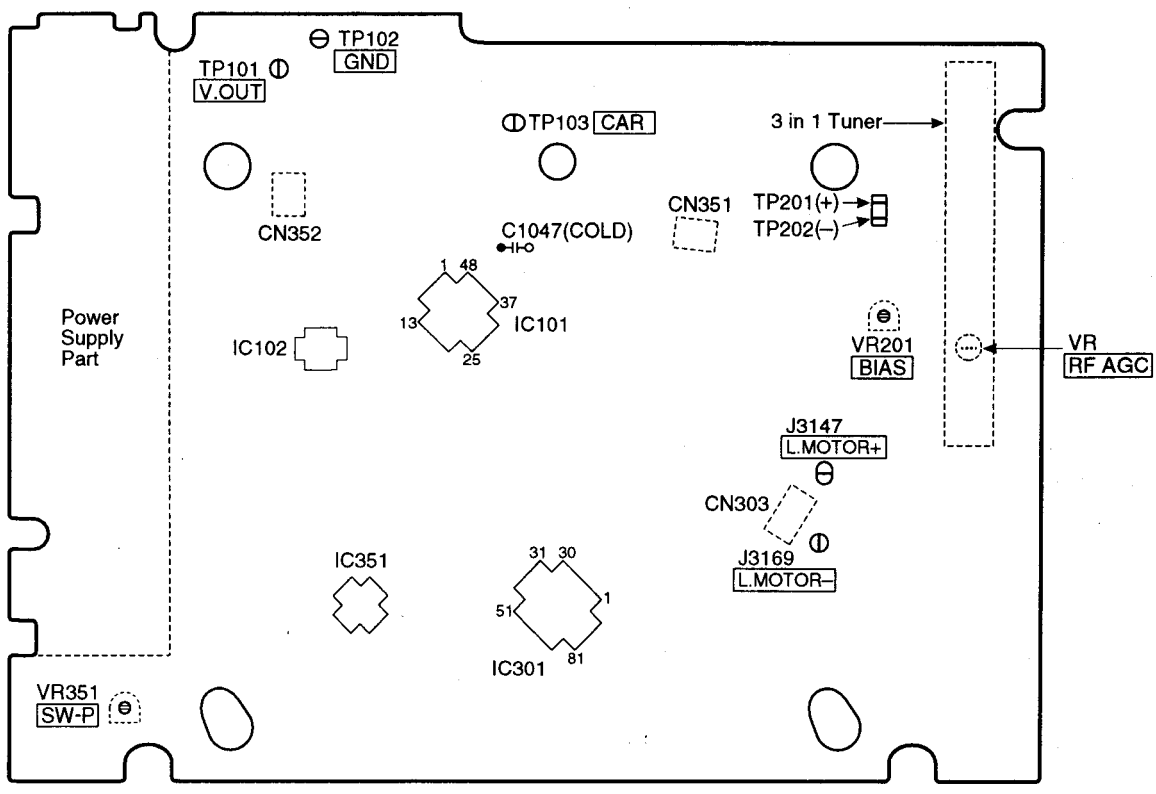
2-1. SERVO CIRCUIT ADJUSTMENT

- These adjustments should be done upon completion of the tape transport adjustments.
- If the tape transport adjustments (except the tilt adjustment) are done after these adjustments, follow the procedures again in section 2-1-3, "switching position adj."
- When a cassette tape is loaded, auto-tracking will be set immediately after starting the first playback. To adjust servo circuit, set back to the manual tracking condition, and set the tracking to the center position.

2-1-1. TEST EQUIPMENT AND STANDARDS REQUIRED

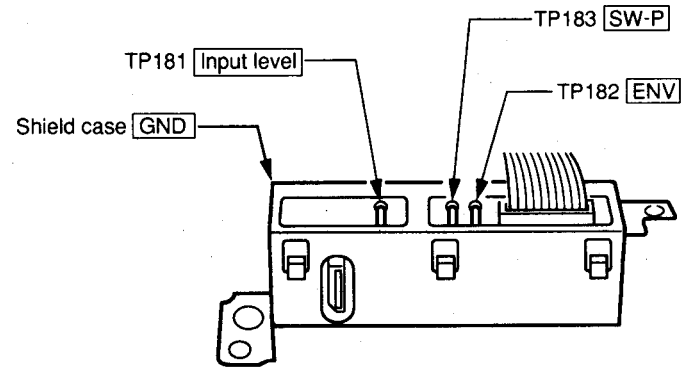
Oscilloscope	Vertical sensitivity Bandwidth	: 5 mV/DIV, external trigger : more than 10 MHz
Alignment Tape	MH-2 (H-7099-052-H)	: SP mode, monoscope, 6 KHz
Blank Tape	VHS-type cassette tape	
Monitor TV		

2-1-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side)

Fig. 2-1-1



VP-1 PWB Assembly

Fig. 2-1-2

2-1-3. SWITCHING POSITION ADJ.

Measuring Point	Measuring Equipment	Adj. Condition
TP101 (VIDEO OUT) TP183 (SW-P)	Oscilloscope	PLAY mode Alignment tape (MH-2)

Adj. Location	Adj. Value
VR351 (SW-P)	6.5 H ± 0.5 H

1. After ejecting the cassette tape, load the alignment tape.
2. Within two seconds after the playback screen is displayed, press the remote control tracking buttons (▲) once, and cheak that the ATR display goes off.
3. Press the remote control tracking button (▼) once and set the tracking to the center.
   Note: Do not press the tracking buttons (▲) and (▼) continuosly.
4. Adjust VR351 (SW-P) so that the width of "T" becomes 6.5 H ± 0.5 H as shown in Fig. 2-1-3.

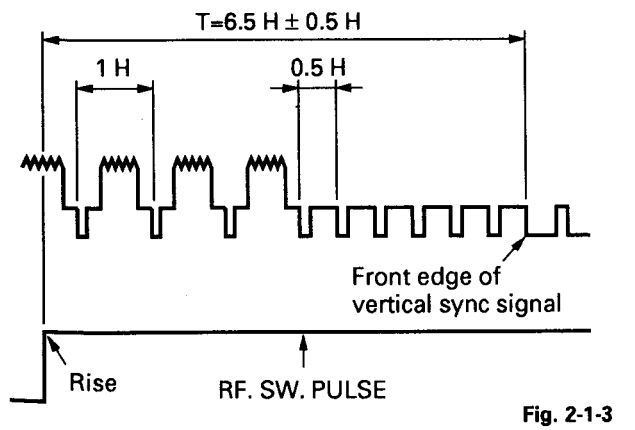


Fig. 2-1-3

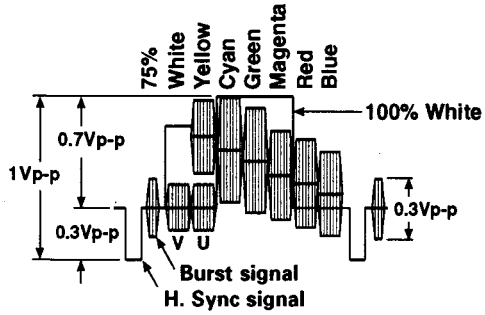
2-2. VIDEO CIRCUIT ADJUSTMENT

- In this model, video circuit adjustments (except for VCO circuit) are not performed. To check whether operations are normal, check the AGC level and PB-Y level using the following method.
- Use the adjustment relay jig to provide simple repairing of the VP-1 PWB assembly.

2-2-1. TEST EQUIPMENT AND STANDARDS REQUIRED

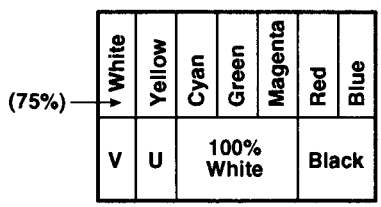
Color Bar Signal Generator	PAL Color bar signel with 100% white level (EBU color bar signel)
Oscilloscope	Vertical sensitivity : 5 mV/DIV, external trigger Bandwidth : more than 10 MHz
Oscilloscope Probe	Input capacity : less than 25 pF (10:1) less than 40 pF (1:1) Covering frequency : DC ~ 40 MHz (10:1) DC ~ 30 MHz (1:1)
Digital Voltmeter	DC range
Alignment Tape	MH-2 (H-7099-052-H) : SP mode, color bar, 1 kHz (Color bar signal waveform is described below. Refer to Fig. 2-2-1)
Adjustment Relay Jig	J-6082-078-A (VHJ-0065) : 5-wire flat cable for VP-1 PWB assembly

ALIGNMENT TAPE COLOR BAR SIGNAL



Color bar signal waveform (MH-2)

Fig. 2-2-1



Color bar pattern (MH-2) on monitor TV

Fig. 2-2-2

ADJUSTMENT RELAY JIG

Connect the flat cable end from the cylinder assembly to the VP-1 PWB assembly using the relay jig to provide simple repairing or adjustment of the VP-1 PWB assembly, as shown in Fig. 2-2-3. Further, when adjusting the VP-1 PWB assembly, be sure to make contact an end of shield case with bracket of the VP-1 PWB assembly to maintain the shield effect. If the VP-1 PWB assembly does not contact, there is insufficient ground and no proper play back image can be obtained.

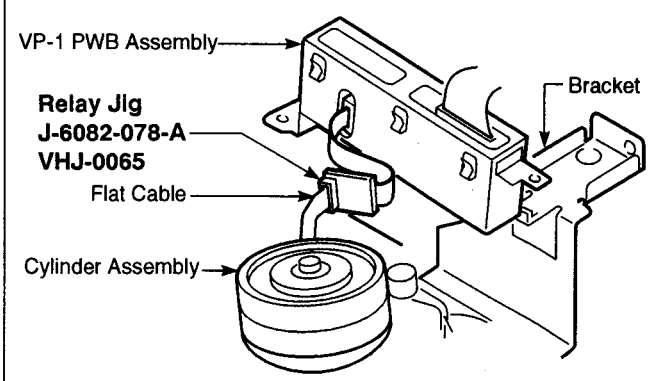


Fig. 2-2-3

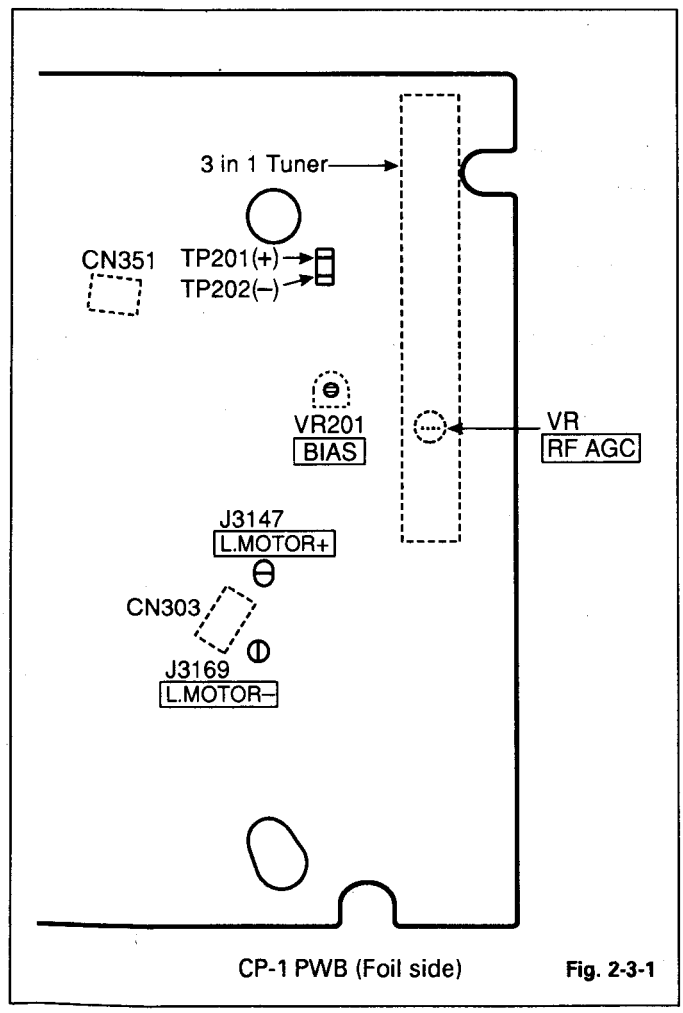
2-3. AUDIO CIRCUIT ADJUSTMENT

- Before making these adjustments, be sure to make the adjustments described in the tape path adjustment, especially the ACE heads adjustments (refer to the separate volume "Mechanism Manual") so that the tape traveling between the supply side guide roller and loading guide post runs without fluttering or curling.
- Before making these adjustments (except the ACE heads adjustments), be sure to make the adjustments described in section 2-1, "Servo Circuit." and section 2-2, "Video Circuit."

2-3-1. TEST EQUIPMENT AND STANDARDS REQUIRED

Oscilloscope	Vertical sensitivity : 10 mV/DIV Bandwidth : more than 30 MHz
AC Voltmeter	Effective value indication Input frequency : 10 Hz ~ 20 kHz Input impedance : more than 1 MΩ Measurement level : 1 mV (full scale)
Frequency Counter	Input frequency : 20 Hz ~ 10 MHz
Blank Tape	VHS-type cassette tape

2-3-2. LOCATION OF ADJUSTMENT POINTS



CP-1 PWB (Foil side) **Fig. 2-3-1**

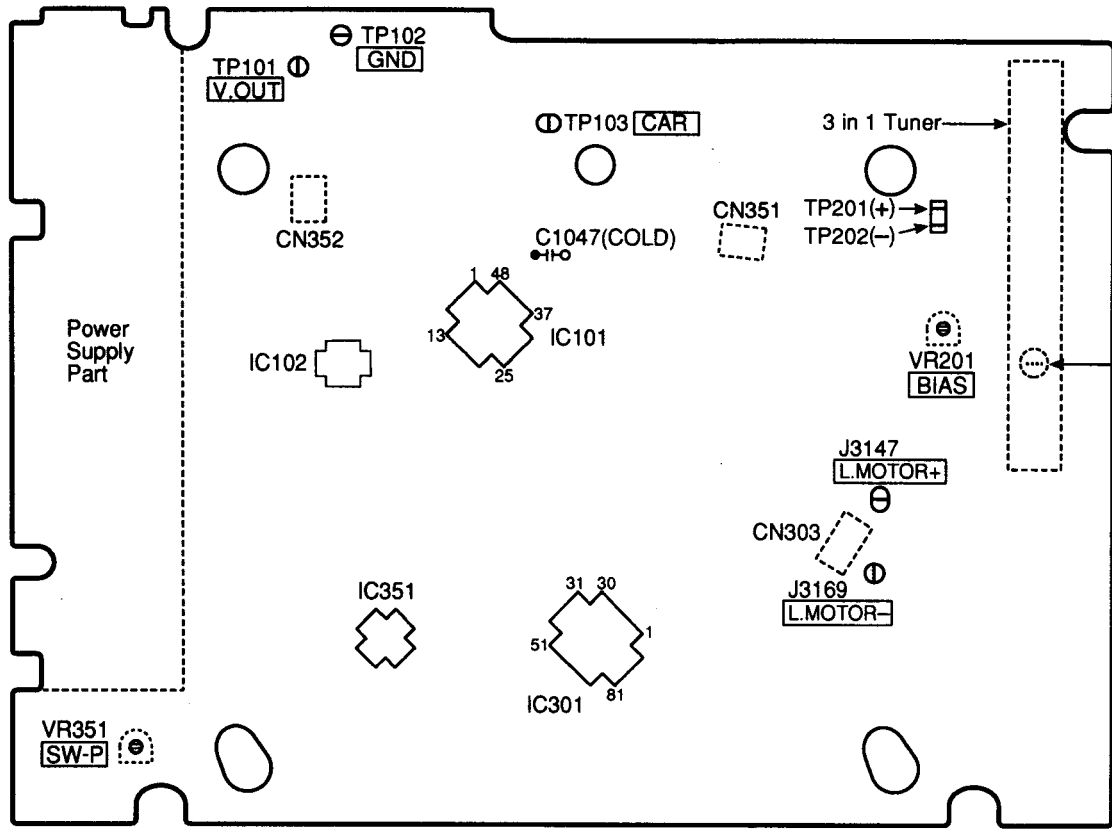
2-3-3. BIAS LEVEL ADJ.

Measuring Point	Measuring Equipment	Adj Condition
TP201 (HOT) TP202 (COLD)	Oscilloscope AC voltmeter Frequency counter	REC (SP) mode Blank tape

Adj. Location	Adj. Value
VR201 (BIAS)	26 mVrms

1. Load the VCR with a blank tape and select the record mode without all incoming signal.
2. After confirming on the oscilloscope that a 70 kH ± 5 kHz sine wave is being output, adjust VR201 (BIAS) so that the AC voltmeter's reading is 26 mVrms.

2-2-2. LOCATION OF TEST POINTS



CP-1 PWB (Foil side)

Fig. 2-2-4

2-2-3. AGC LEVEL CHECK.

Measuring Point	Measuring Equipment	Adj Condition
IC101 47 pin or C1047 (→)	Color bar generator Oscilloscope (10:1 probe)	E-E mode

Adj. Location	Specified Value
—	0.5 Vp-p ± 0.05 Vp-p

1. Connect the color bar generator to the video input terminal.
2. Make sure that the AGC level is 0.5 Vp-p ± 0.05 Vp-p as shown in Fig. 2-2-5.

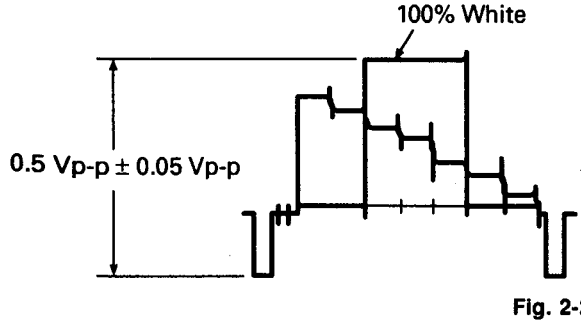


Fig. 2-2-5

2-2-4. PB-Y LEVEL CHECK.

Measuring Point	Measuring Equipment	Adj Condition
TP101 (VIDEO OUT)	Oscilloscope	PLAY (SP) mode Aignment tape (MH-2)

Adj. Location	Specified Value
—	1 Vp-p ± 0.1 Vp-p

1. Terminate the video output terminal with a 75Ω resistor.
2. Make sure that the video luminance signal level is 1 Vp-p ± 0.1 Vp-p. (Refer to Fig. 2-2-6)

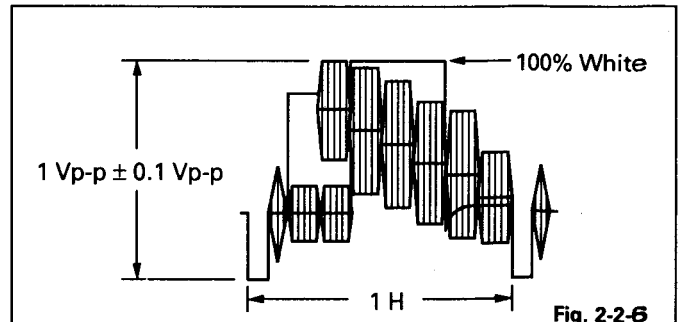


Fig. 2-2-6

2-4. IF CIRCUIT ADJUSTMENT

- In this model, the circuits of the TUNER, IF, and RF converter have been made into one. Therefore, should one circuit malfunction, the whole unit must be replaced.

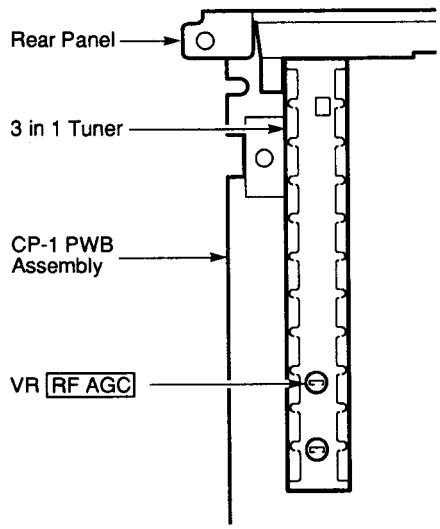
Note: The 3 in 1 tuner dose not need any adjustments, because precise adjustments were down befor shipment.

- The adjustments for the IF (RF AGC) circuit of the 3 in 1 tuner are described below.

2-4-1. TEST EQUIPMENT AND STANDARD REQUIRED

Monitor TV	

2-4-2. LOCATION OF ADJUSTMENT POINT



3 in 1 Tuner

Fig. 2-4-1

2-4-3. RF AGC ADJ.

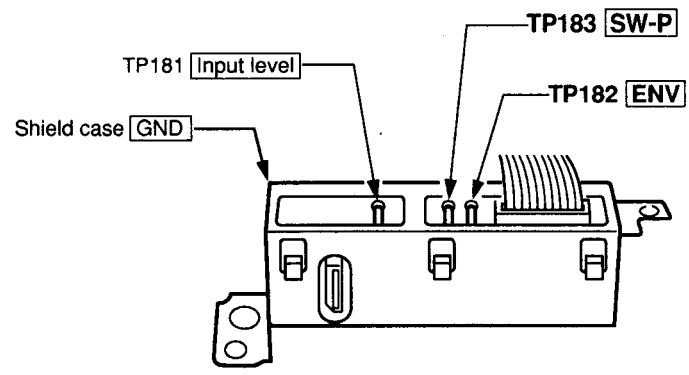
Measuring Point	Measuring Equipment	Adj. Condition
Picture of monitor TV	Monitor TV	E-E mode

Adj. Location	Adj. Value
VR (RF AGC) (on the 3 in 1 tuner)	S/N is best point

1. Connect the monitor TV to the VHF/UHF antenna output terminal.
2. Connect the VHF or UHF antenna to the VHF/UHF antenna input terminal.
3. Receive the middle electrical field (70 dBμ ~ 90 dBμ) of the VHF or UHF channel, and slowly turn the VR (RF AGC) from the point where snow-noise is present to the point where it just disappears from the monitor TV.
4. Confirm by monitor TV that there is no beat and saturation (S/N is best point) when receiving any TV channel.

3. TEST POINTS FOR TAPE PATH ADJUSTMENT

Test points TP182 (ENV) and TP183 (SW-P) for tape path adjustment are shown in figure below.



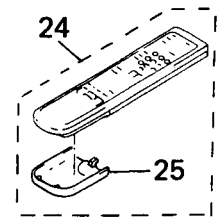
VP-1 PWB Assembly

Fig. 3-1

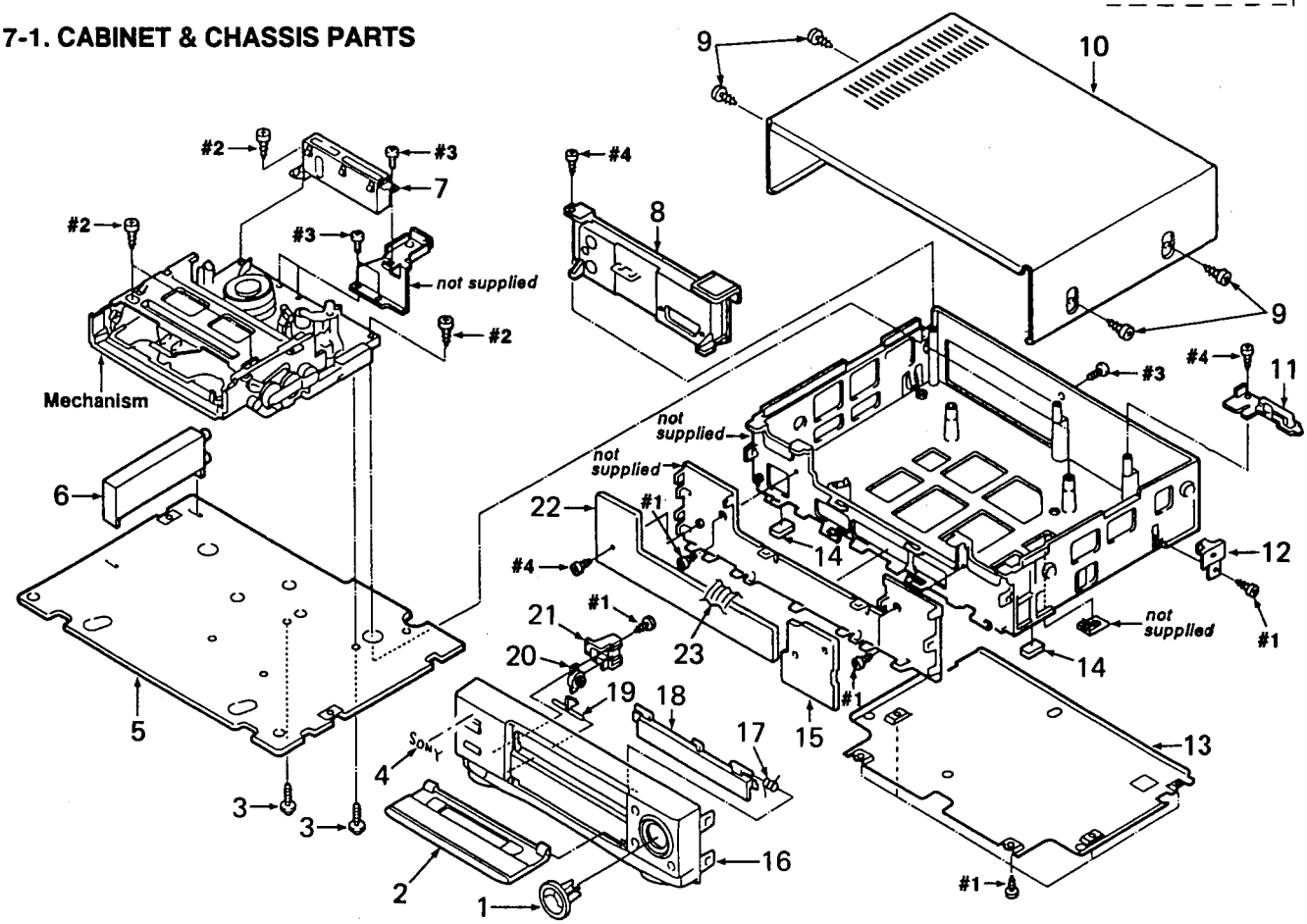
SECTION 7
EXPLODED VIEWS

NOTE :

- -XX, -X mean standardized parts, so they may have some difference from the original one.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list and accessories and packing materials are given in the last of this parts list.



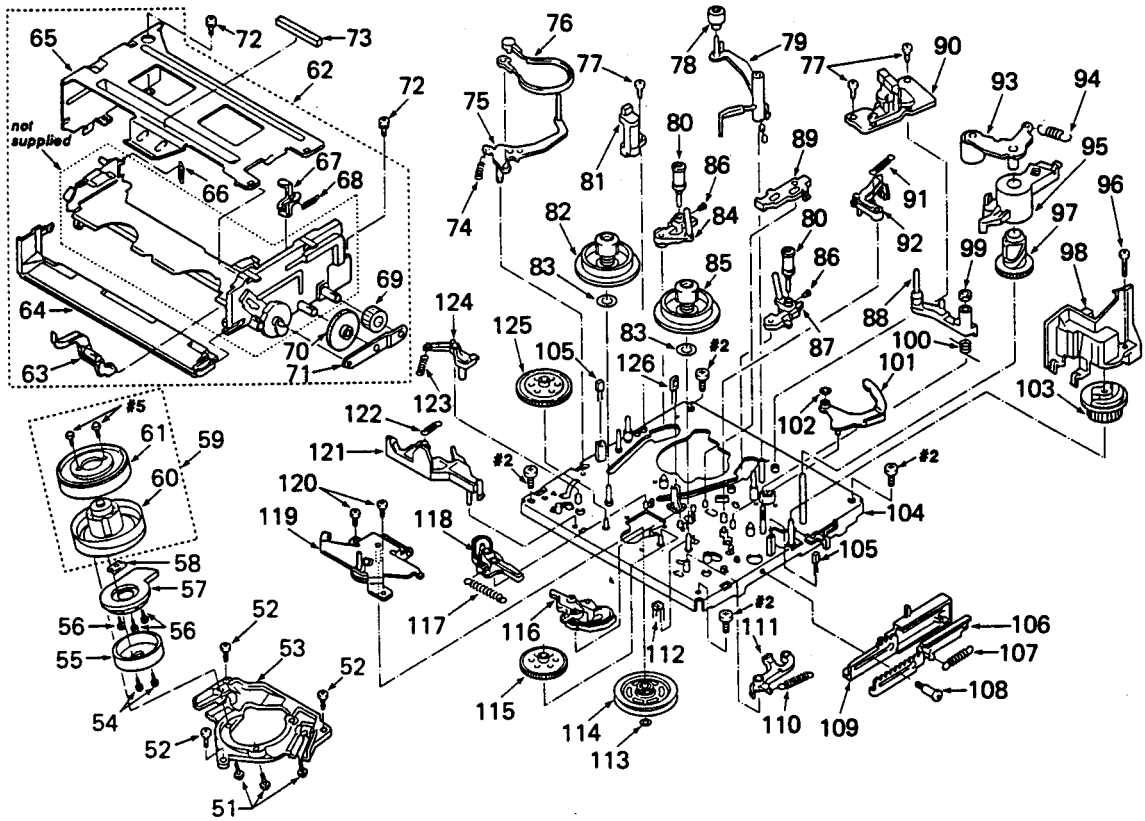
7-1. CABINET & CHASSIS PARTS



Ref. No.	Part No.	Description	Remark
1	A-6780-189-A	BUTTON BOARD, COMPLETE	
2	A-6780-336-A	DOOR ASSY	
3	3-965-446-01	SCREW, SPECIAL	
4	3-942-768-02	EMBLEM (NO.5), SONY	
* 5	A-6796-294-A	CP-A BOARD, COMPLETE (E110IT)	
* 5	A-6796-365-A	CP-A BOARD, COMPLETE (E105)	
6	1-693-331-11	TUNER (RF/TU/IF) (E105)	
6	1-693-295-11	TUNER (RF/TU/IF) (E110IT)	
* 7	A-6796-270-A	VP-I BOARD, COMPLETE	
* 8	3-968-720-01	BRACKET, TERMINAL (E105)	
* 8	3-968-977-01	BRACKET, TERMINAL (E110IT)	
9	3-740-382-01	+BTS-B S 4X12	
* 10	3-963-652-01	COVER, TOP	
11	3-963-641-01	HOLDER (AC INLET)	
* 12	3-963-642-01	TOP HOLDER COVER	

Ref. No.	Part No.	Description	Remark
* 13	3-963-620-01	COVER, BOTTOM	
14	3-942-661-01	STAND, FELT	
* 15	A-6796-090-A	TM-2 BOARD, COMPLETE	
16	A-6780-335-A	CABINET ASSY, FRONT (E110IT)	
16	A-6780-371-A	CABINET ASSY, FRONT (E105)	
17	3-960-936-01	SPRING	
18	3-963-622-01	DOOR, CASSETTE (E110IT)	
18	3-969-272-01	DOOR, CASSETTE (E105)	
19	3-963-623-01	GEAR	
20	3-964-333-01	DAMPER	
* 21	3-963-624-01	HOLDER	
* 22	A-6796-052-A	TM-1 BOARD, COMPLETE	
23	1-775-506-11	CABLE, FLEXIBLE FLAT	
24	1-473-155-41	REMOTE COMMANDER (RMT-V166B)	
25	3-708-885-01	COVER, BATTERY	

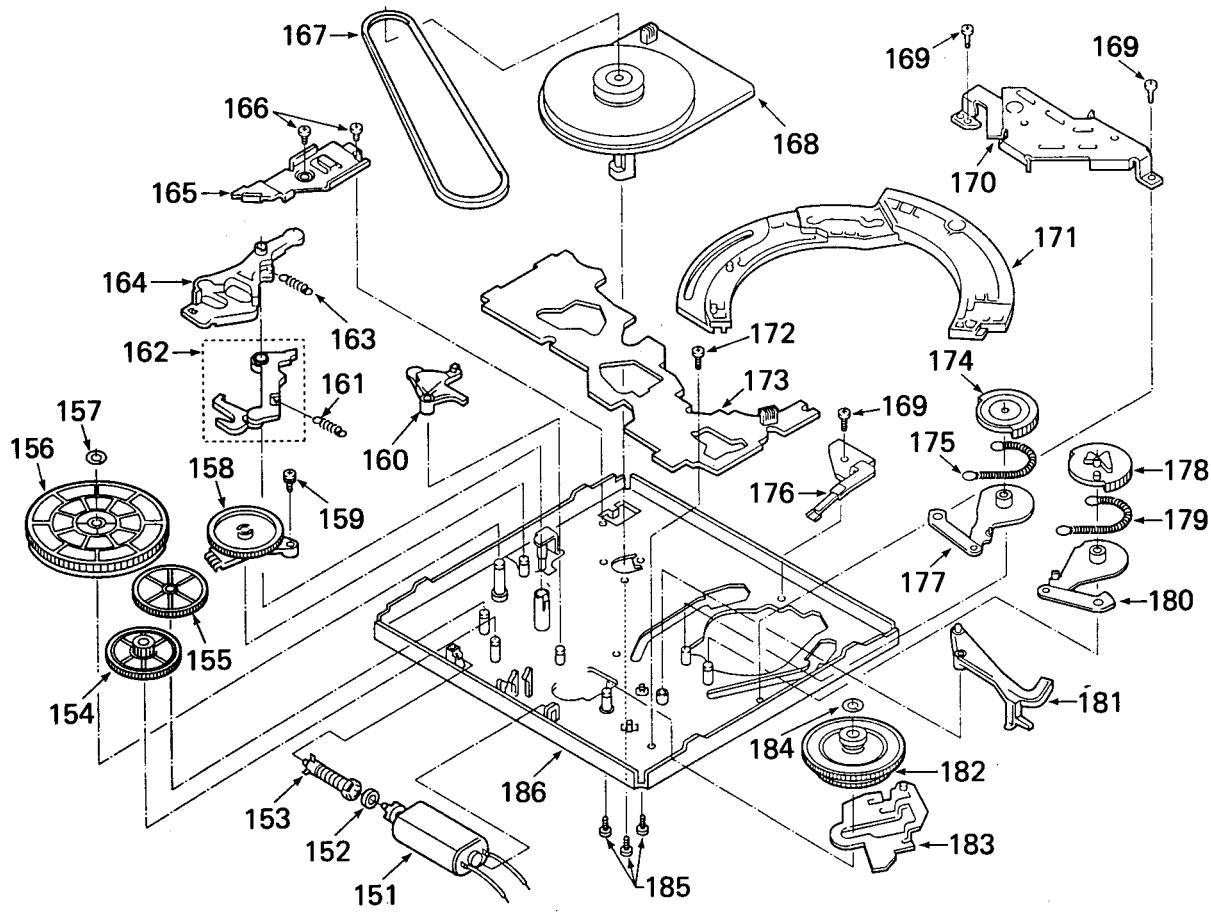
7-2. MECHANISM PARTS-1



Ref. No.	Part No.	Description	Remark
51	3-963-798-01	SCREW (2.6X6)	
52	3-961-034-01	SCREW (2.6X8), SPECIAL	
53	3-965-448-01	MOUNT, CYLINDER	
54	3-963-799-01	SCREW (2.3X6)	
* 55	1-461-017-11	ROTOR	
56	3-963-800-01	SCEREW (2.3X10)	
57	1-411-291-11	STATOR (MOTOR CYL) DC 2W	
58	3-735-738-01	SPACER, MOTOR	
59	A-6050-748-A	CYLINDER COMPLETE ASSY(2N2S-V)	
60	3-940-516-01	CYLINDER (LER, 2AL)	
61	3-942-168-01	CYLINDER ASSY (UPR 2N2S-V)	
* 62	A-6779-276-A	MECHANICAL ASSY, CASSETTE	
63	3-960-915-01	LEVER, DOOR OPENER	
64	3-960-954-01	FRAME, UNDER	
* 65	3-960-952-01	STAND (L)	
66	3-961-303-01	SPRING, LOCK TRAY	
67	3-961-302-01	LEVER, RELEASE	
68	3-961-301-01	SPRING, LID OPENER	
69	3-960-960-01	GEAR, PINION	
70	3-960-959-01	GEAR, LOCK	
* 71	3-960-916-01	HOLDER, GEAR	
72	3-960-939-01	SCREW (2.6X6), SPECIAL	
73	3-965-758-01	PAD	
74	3-960-977-01	SPRING, BT	
75	3-961-016-01	LEVER ASSY, BT	
76	3-963-789-01	BAND (ASSY), BRAKE	
77	3-960-984-01	SCREW (2.6X10), SPECIAL	
78	3-960-975-01	ROLLER ASSY, CLEANER	
79	3-964-887-01	LEVER, CLEANER	
80	3-735-630-01	ROLLER ASSY, GUIDE	
81	3-963-790-01	HEAD, FULL ERASE	
82	3-963-781-01	REEL (ASSY), SUPPLY	
83	3-735-754-01	WASHER (DIA.3), ADJUSTMENT	
84	3-961-037-01	MOUNT ASSY, S INC LINE	
85	3-963-782-01	REEL (ASSY), TAKE UP	
86	3-961-038-01	SCREW (2X3), SPECIAL	
87	3-961-039-01	MOUNT ASSY, T INC LINE	
88	3-966-764-01	LEVER ASSY, ROAD	

Ref. No.	Part No.	Description	Remark
89	3-961-008-01	SLIDE, T ACT BRAKE	
90	3-963-791-01	HEAD (ASSY), R/P ACE	
91	3-961-015-01	SPRING, CAPSTAN BRAKE	
92	3-961-014-01	BRAKE ASSY, CAPSTAN	
93	3-961-024-01	LEVER ASSY, PINCH ROLLER	
94	3-961-026-01	SPRING, PINCH ROLLER	
95	3-961-025-01	PINCH MOUNT, LIFT	
96	3-961-030-01	SCREW (2.6X16), SPECIAL	
97	3-961-027-01	CAM, LIFT PINCH	
98	3-961-029-01	OPENER MOUNT	
99	3-961-045-01	NUT (3X3), SPECIAL	
100	3-961-044-01	SPRING, L GUIDE LEVER	
101	3-964-886-01	LEVER (ASSY), ACT L GUIDE	
102	3-740-367-01	WASHER, SLIT	
103	3-961-028-01	GEAR, CAM PINCH	
* 104	3-963-779-01	CHASSIS (ASSY)	
105	1-810-691-11	PHOTO DIODE PN263L-NC	
106	3-961-306-01	GEAR, START RACK	
107	3-961-307-01	SPRING, FRONT RACK	
108	3-961-021-01	SCREW (2.6X6), SPECIAL	
109	3-961-305-01	GEAR, FRONT RACK	
110	3-961-001-01	SPRING, T SOFT	
111	3-963-784-01	BRAKE (ASSY), SOFT	
112	1-810-692-11	PHOTO DIODE ON2170-R	
113	3-948-603-01	WASHER, SPECIAL	
114	3-960-926-01	PULLEY, REEL	
115	3-960-928-01	GEAR, T REEL	
116	3-963-786-01	BRAKE (ASSY), T	
117	3-966-765-01	SPRING, BRAKE	
118	3-963-785-01	BRAKE (ASSY), S	
119	A-6782-359-A	CLUTCH MOUNT BOARD, COMPLETE	
120	3-960-925-01	SCREW (2.6X4), SPECIAL	
121	3-961-022-01	LEVER, EP SWITCH	
122	3-961-023-01	SPRING, EP SWITCH	
123	3-961-003-01	SPRING, S SOFT	
124	3-961-002-01	LEVER, S SOFT	
125	3-960-927-01	GEAR, S REEL	
126	1-810-690-11	LED LN59L	

7-3. MECHANISM PARTS-2



Ref. No.	Part No.	Description	Remark
151	3-961-047-01	MOTOR ASSY, LOADING	
152	3-961-049-01	DAMPER	
153	3-961-048-01	GEAR (COMPL), WORM	
154	3-961-050-01	GEAR (1), WHEEL	
155	3-963-793-01	GEAR (2), WHEEL	
156	3-963-794-01	CAM, MAIN	
157	3-961-053-01	WASHER (3.6X0.5), SPECIAL	
158	3-963-780-01	SWITCH (P-IT), MODE	
159	3-961-034-01	SCREW (2.6X8), SPECIAL	
160	3-961-012-01	LEVER, CLUTCH CHANGE	
161	3-961-011-01	SPRING, BRAKE RETURN	
162	3-963-788-01	BAR (ASSY), ACT BRAKE LEVER	
163	3-961-013-01	SPRING, CLUTCH CHANGE	
164	3-963-787-01	LEVER, CONTROL BRAKE	
165	3-961-152-01	HARNESS MOUNT	
166	3-960-919-01	SCREW (2.6X3), SPECIAL	
167	3-960-929-01	BELT, REEL	
168	1-698-590-11	MOTOR, CAPSTAN DC 3W	

Ref. No.	Part No.	Description	Remark
169	3-960-921-01	SCREW (2.6X6), SPECIAL	
170	3-963-796-01	MOUNT, CRESCENT	
* 171	3-963-795-01	SLIDE, CRESCENT	
172	3-960-925-01	SCREW (2.6X4), SPECIAL	
* 173	A-6796-028-A	MC-1 BOARD, COMPLETE	
174	3-960-998-01	GEAR, T ROAD	
175	3-961-035-01	SPRING, T ROAD	
176	3-960-920-01	GROUND ASSY, CYL	
177	3-961-036-01	LEVER ASSY, T ROAD	
178	3-960-995-01	GEAR, S ROAD	
179	3-960-996-01	SPRING, S ROAD	
180	3-960-997-01	LEVER ASSY, S ROAD	
181	3-960-982-01	LEVER ASSY, BT SPRING	
182	3-963-783-01	GEAR (ASSY), FRICTION	
183	3-961-007-01	SLIDE, S ACT BRAKE	
184	3-735-755-01	WASHER (DIA.2.6)	
185	3-961-032-01	SCREW (2.6X6), SPECIAL	
* 186	3-963-779-01	CHASSIS (ASSY)	

SECTION 8
ELECTRICAL PARTS LIST

NOTE :
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL : Metal-film resistor
  METAL OXIDE : Metal oxide-film resistor
  F : nonflammable
- Items marked " * "are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u : μ , for example :
  uA.... : μ A.... , uPA.... : μ PA....
  uPB.... : μ PB.... , uPC.... : μ PC....
  uPD.... : μ PD....
- CAPACITORS
  uF : μ F
- COILS
  uH : μ H

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board.

Ref. No.	Part No.	Description			Remark
*	A-6796-294-A	CP-A BOARD, COMPLETE (E110IT)			
*	A-6796-365-A	CP-A BOARD, COMPLETE (E105)			
		**********			
	1-533-583-11	HOLDER, FUSE			
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S			
		< CAPACITOR >			
C1001	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1002	1-162-219-31	CERAMIC	68PF	5%	50V
C1004	1-162-211-31	CERAMIC	33PF	5%	50V
C1006	1-162-211-31	CERAMIC	33PF	5%	50V
C1007	1-164-060-11	CERAMIC	39PF	5%	50V
C1008	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1009	1-162-292-31	CERAMIC	680PF	10%	50V
C1010	1-162-219-31	CERAMIC	68PF	5%	50V
C1021	1-162-195-31	CERAMIC	4.7PF	10%	50V
C1022	1-162-289-31	CERAMIC	390PF	10%	50V
C1024	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1025	1-124-234-00	ELECT	22uF	20%	16V
C1026	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1027	1-161-063-00	CERAMIC	0.1uF	10%	50V
C1028	1-126-154-11	ELECT	47uF	20%	6.3V
C1030	1-124-667-11	ELECT	10uF	20%	100V
C1031	1-124-667-11	ELECT	10uF	20%	100V
C1032	1-126-301-11	ELECT	1uF	20%	50V
C1033	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1035	1-161-021-11	CERAMIC	0.047uF	10%	25V
C1036	1-126-301-11	ELECT	1uF	20%	50V
C1037	1-126-154-11	ELECT	47uF	20%	6.3V
C1038	1-161-063-00	CERAMIC	0.1uF	10%	50V
C1040	1-126-301-11	ELECT	1uF	20%	50V
C1042	1-126-301-11	ELECT	1uF	20%	50V
C1043	1-161-494-11	CERAMIC	0.022uF	30%	25V
C1044	1-161-021-11	CERAMIC	0.047uF	10%	25V
C1045	1-161-772-11	CERAMIC	0.1uF	10%	25V
C1046	1-124-667-11	ELECT	10uF	20%	100V
C1047	1-109-889-11	ELECT	1uF	20%	50V
C1051	1-162-285-31	CERAMIC	180PF	10%	50V
C1052	1-162-211-31	CERAMIC	33PF	5%	50V
C1053	1-101-880-00	CERAMIC	47PF	5%	50V
C1065	1-161-021-11	CERAMIC	0.047uF	10%	25V
C1066	1-126-154-11	ELECT	47uF	20%	6.3V

Ref. No.	Part No.	Description			Remark
C1075	1-161-494-11	CERAMIC	0.022uF	30%	25V
C1081	1-161-063-00	CERAMIC	0.1uF	10%	50V
C1082	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1101	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1102	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1103	1-126-154-11	ELECT	47uF	20%	6.3V
C1104	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1105	1-126-301-11	ELECT	1uF	20%	50V
C1106	1-126-301-11	ELECT	1uF	20%	50V
C1107	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1108	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1110	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1111	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1113	1-126-301-11	ELECT	1uF	20%	50V
C1115	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1116	1-164-079-11	CERAMIC	330PF	10%	50V
C1119	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1131	1-124-465-00	ELECT	0.47uF	20%	50V
C1133	1-124-667-11	ELECT	10uF	20%	100V
C1134	1-161-021-11	CERAMIC	0.047uF	10%	25V
C1201	1-124-472-11	ELECT	470uF	20%	10V
C1202	1-161-063-00	CERAMIC	0.1uF	10%	50V
C2002	1-162-293-31	CERAMIC	820PF	10%	50V
C2004	1-126-154-11	ELECT	47uF	20%	6.3V
C2005	1-161-054-00	CERAMIC	0.018uF	10%	25V
C2009	1-124-234-00	ELECT	22uF	20%	16V
C2010	1-124-589-11	ELECT	47uF	20%	16V
C2013	1-161-053-00	CERAMIC	0.015uF	10%	50V
C2016	1-124-259-11	ELECT	4.7uF	20%	50V
C2017	1-124-667-11	ELECT	10uF	20%	100V
C2019	1-124-589-11	ELECT	47uF	20%	16V
C2020	1-164-077-11	CERAMIC	220PF	10%	50V
C2021	1-110-363-11	CERAMIC	6800PF		100V
C2022	1-161-379-00	CERAMIC	0.01uF	20%	25V
C2024	1-161-379-00	CERAMIC	0.01uF	20%	25V
C2031	1-161-063-00	CERAMIC	0.1uF	10%	50V
C2032	1-161-063-00	CERAMIC	0.1uF	10%	50V
C2073	1-161-056-00	CERAMIC	0.027uF	10%	25V
C2091	1-161-063-00	CERAMIC	0.1uF	10%	50V
C2092	1-162-302-11	CERAMIC	0.0022uF	20%	16V
C2107	1-162-294-31	CERAMIC	0.001uF	10%	50V
C2109	1-161-329-00	CERAMIC	0.0068uF	30%	25V

CP-A

Ref. No.	Part No.	Description				Remark
C3001	1-162-206-31	CERAMIC	20PF	5%	50V	
C3002	1-162-207-31	CERAMIC	22PF	5%	50V	
C3004	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C3005	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C3008	1-126-154-11	ELECT	47uF	20%	6.3V	
C3009	1-161-063-00	CERAMIC	0.1uF	10%	50V	
C3010	1-124-257-00	ELECT	2.2uF	20%	50V	
C3011	1-161-063-00	CERAMIC	0.1uF	10%	50V	
C3014	1-124-472-11	ELECT	470uF	20%	10V	
C3016	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C3017	1-162-294-31	CERAMIC	0.001uF	10%	50V	(E110IT)
C3021	1-101-880-00	CERAMIC	47PF	5%	50V	
C3034	1-161-063-00	CERAMIC	0.1uF	10%	50V	
C3042	1-115-437-11	DL-ELECT	0.1uF		5.5V	
C3072	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C3073	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C3088	1-162-205-31	CERAMIC	18PF	5%	50V	(E105)
C3088	1-164-060-11	CERAMIC	39PF	5%	50V	(E110IT)
C3093	1-124-667-11	ELECT	10uF	20%	100V	
C3094	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C3501	1-161-053-00	CERAMIC	0.015uF	10%	50V	
C3502	1-161-329-00	CERAMIC	0.0068uF	30%	25V	
C3503	1-161-053-00	CERAMIC	0.015uF	10%	50V	
C3504	1-124-234-00	ELECT	22uF	20%	16V	
C3505	1-124-234-00	ELECT	22uF	20%	16V	
C3506	1-161-329-00	CERAMIC	0.0068uF	30%	25V	
C3507	1-124-234-00	ELECT	22uF	20%	16V	
C3508	1-124-234-00	ELECT	22uF	20%	16V	
C3509	1-126-154-11	ELECT	47uF	20%	6.3V	
C3510	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C3511	1-162-286-31	CERAMIC	220PF	10%	50V	
C3513	1-161-061-11	CERAMIC	0.068uF	10%	50V	
C3514	1-136-167-00	FILM	0.15uF	5%	50V	
C3515	1-130-487-00	MYLAR	0.022uF	5%	50V	
C3516	1-162-302-11	CERAMIC	0.0022uF	20%	16V	
C3517	1-162-301-11	CERAMIC	0.0015uF	20%	16V	
C3522	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C3523	1-126-301-11	ELECT	1uF	20%	50V	
C3524	1-161-379-00	CERAMIC	0.01uF	20%	25V	
C3525	1-124-465-00	ELECT	0.47uF	20%	50V	
C3526	1-161-024-00	CERAMIC	0.082uF	10%	25V	
C3530	1-126-154-11	ELECT	47uF	20%	6.3V	
C3536	1-126-155-11	ELECT	100uF	20%	6.3V	
C3540	1-164-073-11	CERAMIC	100PF	10%	50V	
C3551	1-136-166-00	FILM	0.12uF	5%	50V	
C3552	1-164-064-11	CERAMIC	56PF	5%	50V	
C3553	1-126-301-11	ELECT	1uF	20%	50V	
C3554	1-162-284-31	CERAMIC	150PF	10%	50V	
C3555	1-161-379-00	CERAMIC	0.01uF	20%	25V	

Ref. No.	Part No.	Description				Remark
C3556	1-162-294-31	CERAMIC	0.001uF	10%	50V	
C3558	1-124-229-00	ELECT	33uF	20%	10V	
C3561	1-130-490-11	MYLAR	0.039uF	5%	50V	
C3570	1-161-063-00	CERAMIC	0.1uF	10%	50V	
C3571	1-161-063-00	CERAMIC	0.1uF	10%	50V	
⚠C5001	1-136-188-11	FILM	0.068uF	5%	250V	
⚠C5002	1-136-188-11	FILM	0.068uF	5%	250V	
⚠C5005	1-161-741-00	CERAMIC	0.001uF	10%	400V	
⚠C5007	1-115-385-11	CERAMIC	2200PF	20%	400V	
C5007	1-161-741-00	CERAMIC	0.001uF	10%	400V	
C5010	1-125-554-11	ELECT	47uF	20%	400V	
C5011	1-124-257-00	ELECT	2.2uF	20%	50V	
C5015	1-161-772-11	CERAMIC	0.1uF	10%	25V	
C5017	1-164-080-11	CERAMIC	390PF	10%	50V	
C5020	1-115-678-11	CERAMIC	47PF		1kV	
C5021	1-110-973-11	CERAMIC	2200PF		500V	
C5101	1-124-525-11	ELECT	1000uF	20%	25V	
C5102	1-126-168-11	ELECT	1000uF	20%	6.3V	
C5103	1-111-063-11	ELECT	470uF	20%	25V	
C5104	1-124-525-11	ELECT	1000uF	20%	25V	
C5105	1-126-804-11	ELECT	100uF	20%	50V	
C5106	1-126-967-11	ELECT	47uF	20%	35V	
C5107	1-126-176-11	ELECT	220uF	20%	10V	
C5111	1-124-455-00	ELECT	100uF	20%	16V	
C5112	1-124-667-11	ELECT	10uF	20%	100V	
C5114	1-124-667-11	ELECT	10uF	20%	100V	
C5115	1-126-162-11	ELECT	3.3uF	20%	50V	
C5116	1-124-667-11	ELECT	10uF	20%	100V	
C5124	1-124-464-11	ELECT	0.22uF	20%	50V	
C5135	1-136-163-00	FILM	0.068uF	5%	50V	
C6001	1-124-259-11	ELECT	4.7uF	20%	50V	
C6003	1-124-257-00	ELECT	2.2uF	20%	50V	
C6004	1-161-063-00	CERAMIC	0.1uF	10%	50V	
C6005	1-161-063-00	CERAMIC	0.1uF	10%	50V	
C6007	1-124-667-11	ELECT	10uF	20%	100V	
C6008	1-161-057-00	CERAMIC	0.033uF	10%	50V	
C6009	1-124-525-11	ELECT	1000uF	20%	25V	(E105)
C6009	1-124-589-11	ELECT	47uF	20%	16V	(E110IT)
C6010	1-161-375-00	CERAMIC	0.0022uF	20%	50V	(E110IT)
C6010	1-162-289-31	CERAMIC	390PF	10%	50V	(E105)
C6013	1-162-302-11	CERAMIC	0.0022uF	20%	16V	(E105)
C6014	1-162-302-11	CERAMIC	0.0022uF	20%	16V	
C6015	1-162-302-11	CERAMIC	0.0022uF	20%	16V	
C6082	1-161-063-00	CERAMIC	0.1uF	10%	50V	
C6601	1-124-667-11	ELECT	10uF	20%	100V	
C6602	1-124-667-11	ELECT	10uF	20%	100V	
C6922	1-126-965-11	ELECT	22uF	20%	50V	
C6924	1-162-285-31	CERAMIC	180PF	10%	50V	(E110IT)
C6925	1-136-171-00	FILM	0.33uF	5%	50V	(E110IT)

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CP-A

Ref. No.	Part No.	Description	Remark
C6926	1-101-880-00	CERAMIC 47PF 5% 50V	(E105)
C6926	1-136-169-00	FILM 0.22uF 5% 50V	(E110IT)
		< DIODE >	
D1075	8-719-991-33	DIODE 1SS133T-77	
D1081	8-719-991-33	DIODE 1SS133T-77	
D1082	8-719-991-33	DIODE 1SS133T-77	
D1133	8-719-109-89	DIODE RD5.6ES-B2	
D1141	8-719-991-33	DIODE 1SS133T-77	
D1145	8-719-991-33	DIODE 1SS133T-77	
D1146	8-719-110-41	DIODE RD15ES-B2	
D1201	8-719-991-33	DIODE 1SS133T-77	
D1202	8-719-991-33	DIODE 1SS133T-77	
D3001	8-719-991-33	DIODE 1SS133T-77	
D3050	8-719-901-83	DIODE 1SS83	
D3101	8-719-991-33	DIODE 1SS133T-77	
D3102	8-719-991-33	DIODE 1SS133T-77	
D3121	8-719-991-33	DIODE 1SS133T-77	
D3502	8-719-991-33	DIODE 1SS133T-77	
D5001	1-809-768-11	DIODE DBC10G	
D5003	8-719-901-83	DIODE 1SS83	
D5004	8-719-901-83	DIODE 1SS83	
D5006	8-719-901-83	DIODE 1SS83	
D5010	1-808-898-11	DIODE AP01C-V0	
D5013	1-810-884-11	DIODE PHOTO COUPLER PC123U2	
D5020	1-801-319-11	DIODE MA2270B	
D5021	1-801-320-11	DIODE MA2300A	
D5022	1-801-320-11	DIODE MA2300A	
D5023	1-801-319-11	DIODE MA2270B	
D5101	1-810-795-11	DIODE RL2Z-LF-C4	
D5102	1-810-795-11	DIODE RL2Z-LF-C4	
D5103	8-719-901-83	DIODE 1SS83	
D5104	8-719-901-83	DIODE 1SS83	
D5105	1-808-899-11	DIODE AG01-V2	
D5107	8-719-109-89	DIODE RD5.6ES-B2	
D5109	8-719-109-89	DIODE RD5.6ES-B2	
D5110	8-719-921-87	DIODE MTZJ-T-77-13A	
D5111	8-719-109-93	DIODE RD6.2ES-B2	
D5116	8-719-300-45	DIODE EM-1Z	
D5120	8-719-901-83	DIODE 1SS83	
D6910	8-719-982-27	DIODE MTZJ-T-77-33C	(E105)
		< FUSE >	
⚠F5001	1-532-297-00	QUICK-ACTING FUSE (T2.5A H 250V)	
⚠F5030	1-533-776-11	THRM FUSE (2A 250V)	
		< IC >	
IC101	1-810-958-11	IC LA7436AM-MPB	

Ref. No.	Part No.	Description	Remark
IC102	1-801-035-11	IC CXL1511M	
IC104	8-759-820-48	IC LA7221	
IC201	1-810-497-11	IC LA7285M-TRM	
IC301	1-810-373-11	IC LC866732A-5446	
IC302	8-759-353-59	IC LB1643	
IC303	1-810-318-11	IC MN1381-L(TA)	
IC351	1-810-027-11	IC DIODE SL-2994-54TB	
IC511	1-810-060-11	IC L5431-AA	
IC602	8-759-248-79	IC AT24C01A-10PC	
IC691	8-759-800-65	IC LA7910	(E110IT)
IC692	1-809-787-11	IC L5631	(E110IT)
		< COIL >	
L1001	1-410-324-11	INDUCTOR 4.7uH	
L1002	1-410-518-41	INDUCTOR 56uH	
L1003	1-410-511-11	INDUCTOR 15uH	
L1004	1-410-514-11	INDUCTOR 27uH	
L1009	1-410-521-11	INDUCTOR 100uH	
L1116	1-410-511-11	INDUCTOR 15uH	
L1119	1-500-129-11	CORE, BEAD	
L1231	1-500-210-11	CORE, BEAD	
L1235	1-500-225-11	CORE, BEAD	
L2002	1-410-087-31	INDUCTOR 10mH	
L2003	1-410-491-11	INDUCTOR 560uH	
L3001	1-500-129-11	CORE, BEAD	
L3003	1-500-129-11	CORE, BEAD	
⚠L5001	1-409-611-11	COIL, LINE FILTER	
L5010	1-414-540-11	INDUCTOR 0uH	
L5101	1-410-509-11	INDUCTOR 10uH	
L5102	1-414-540-11	INDUCTOR 0uH	
L6008	1-410-509-11	INDUCTOR 10uH	(E110IT)
L6009	1-410-509-11	INDUCTOR 10uH	
L6602	1-410-509-11	INDUCTOR 10uH	
L6604	1-414-142-11	INDUCTOR 1uH	
		< PROTECTOR >	
⚠PR511	1-533-613-11	PROTECTOR, IC 0.8A 50V	
		< TRANSISTOR >	
Q1001	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q1004	8-729-266-83	TRANSISTOR 2SC2668	
Q1005	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q1036	8-729-119-78	TRANSISTOR 2SC2785-HFE	
Q1043	8-729-902-11	TRANSISTOR 2SC2021	
Q1052	8-729-119-76	TRANSISTOR 2SA1175-HFE	
Q1060	8-729-900-89	TRANSISTOR DTC144ES	
Q1141	8-729-900-89	TRANSISTOR DTC144ES	
Q1145	8-729-993-72	TRANSISTOR 2SA937-Q	

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CP-A MC-1 TM-1

Ref. No.	Part No.	Description			Remark
Q1201	8-729-119-78	TRANSISTOR	2SC2785-HFE		
Q2001	1-810-471-11	TRANSISTOR	TR 2SC3331-S-AA		
Q2002	8-729-900-89	TRANSISTOR	DTC144ES		
Q2003	1-809-869-11	TRANSISTOR	DTA124EL-TL2		
Q3001	8-729-206-20	TRANSISTOR	DTC114EL-TL2		
Q3002	8-729-206-20	TRANSISTOR	DTC114EL-TL2		
Q3091	8-729-140-97	TRANSISTOR	KSA708		
Q3092	8-729-206-20	TRANSISTOR	DTC114EL-TL2		
Q3504	8-729-900-89	TRANSISTOR	DTC144ES		
Q3553	8-729-902-11	TRANSISTOR	2SC2021		
⚠Q5001	1-810-994-11	TRANSISTOR	2SK1460		
Q5002	1-809-602-11	TRANSISTOR	2SC2274-F-AA		
Q5003	8-729-140-97	TRANSISTOR	KSA708		
Q5004	1-809-602-11	TRANSISTOR	2SC2274-F-AA		
Q5101	8-729-205-97	TRANSISTOR	2SC3668-Y		
Q5103	8-729-194-57	TRANSISTOR	2SC945-P		
Q5131	8-729-205-97	TRANSISTOR	2SC3668-Y		
Q5132	8-729-422-57	TRANSISTOR	UN4111		
Q5133	8-729-900-80	TRANSISTOR	DTC114ES		
Q5134	8-729-119-78	TRANSISTOR	2SC2785-HFE		
Q6921	1-810-226-11	TRANSISTOR	2SC2960-F-SPA (E110IT)		
		< RESISTOR >			
R3001	1-212-946-11	FUSIBLE	3.3	5%	1/2W
R5001	1-202-724-00	SOLID	2.7M	10%	1/2W
R5002	1-216-031-00	METAL CHIP	180	5%	1/10W
R5003	1-216-055-00	METAL CHIP	1.8K	5%	1/10W
R5004	1-216-109-00	METAL CHIP	330K	5%	1/10W
R5006	1-216-073-00	METAL CHIP	10K	5%	1/10W
R5007	1-216-677-11	METAL CHIP	12K	0.5%	1/10W
R5009	1-216-095-00	METAL CHIP	82K	5%	1/10W
R5110	1-212-867-00	FUSIBLE	27	5%	1/4W
R5112	1-216-063-00	METAL CHIP	3.9K	5%	1/10W
R5135	1-216-027-00	METAL CHIP	120	5%	1/10W
R6071	1-217-735-11	FUSIBLE	680	5%	1/4W
		< TRANSFORMER >			
T2001	1-433-370-11	TRANSFORMER, OSC			
⚠T5001	1-429-506-11	TRANSFORMER, POWER PULSE			
		< VARIABLE RESISTOR >			
VR201	1-228-997-00	RES, ADJ, METAL 100K (BIAS)			
VR351	1-228-998-00	RES, ADJ, METAL 220K (SW-P)			
		< VIBRATOR >			
X1001	1-760-652-11	CRYSTAL OSC (4.433619MHz)			
X3001	1-760-653-11	CERAMIC OSC			
X3002	1-579-220-11	CRYSTAL, OSC (32KHZ)			

Ref. No.	Part No.	Description			Remark
*	A-6796-028-A	MC-1 BOARD, COMPLETE			
		**********			
		< CAPACITOR >			
C8001	1-161-063-00	CERAMIC	0.1uF	10%	50V
		< SWITCH >			
S8002	1-762-173-11	SWITCH, EP (1P-1T)			
*	A-6796-052-A	TM-1 BOARD, COMPLETE			
		**********			
*	3-947-425-01	HOLDER, LED			
*	3-958-684-01	HOLDER, FL			
*	3-966-986-01	HOLDER, IR			
		< INDICATOR TUBE >			
A7101	1-517-431-11	TUBE, FLUORESCENT			
		< CAPACITOR >			
C7103	1-161-379-00	CERAMIC	0.01uF	20%	25V
C7104	1-161-379-00	CERAMIC	0.01uF	20%	25V
		< DIODE >			
D7101	8-719-301-58	LED	SEL2910D-D (ON/STANDBY)		
D7102	8-719-301-58	LED	SEL2910D-D (ON/STANDBY)		
D7103	8-719-301-58	LED	SEL2910D-D (OPC)		
D7104	8-719-301-58	LED	SEL2910D-D (ATR)		
D7112	8-719-912-20	DIODE	1SS120		
D7113	8-719-912-20	DIODE	1SS120		
D7114	8-719-912-20	DIODE	1SS120		
D7115	8-719-912-20	DIODE	1SS120		
		< TRANSISTOR >			
Q7103	8-729-206-20	TRANSISTOR	DTC114EL-TL2		
Q7104	8-729-206-20	TRANSISTOR	DTC114EL-TL2		
		< RECEIVER PACK >			
RR711	1-467-882-11	RECEIVER PACK UNIT, IR			
		< SWITCH >			
S7101	1-762-303-11	SWITCH, PUSH (1P-1T) (CL)			
S7111	1-762-303-11	SWITCH, PUSH (1P-1T) (PROGRAM +)			
S7112	1-762-303-11	SWITCH, PUSH (1P-1T) (PROGRAM -)			
S7113	1-762-303-11	SWITCH, PUSH (1P-1T) (ON/STANDBY)			
S7114	1-762-303-11	SWITCH, PUSH (1P-1T) (ATR)			

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Ref. No.	Part No.	Description	Remark
S7115	1-762-303-11	SWITCH, PUSH (1P-1T) (EJECT)	
S7116	1-762-303-11	SWITCH, PUSH (1P-1T) (SERCH)	
S7117	1-762-303-11	SWITCH, PUSH (1P-1T) (TUNER PRESET)	
S7118	1-762-303-11	SWITCH, PUSH (1P-1T) (ERASE)	
S7119	1-762-303-11	SWITCH, PUSH (1P-1T) (TRACKING ▲)	
S7120	1-762-303-11	SWITCH, PUSH (1P-1T) (TRACKING ▼)	
*	A-6796-090-A	TM-2 BOARD, COMPLETE	
		**********	
	3-964-762-01	HOLDER	
		< DIODE >	
D7201	8-719-304-77	LED SEL2210R-C (REC)	
D7202	8-719-304-77	LED SEL2210R-C (TIMER)	
D7211	8-719-912-20	DIODE 1SS120	
D7212	8-719-912-20	DIODE 1SS120	
D7213	8-719-912-20	DIODE 1SS120	
		< SWITCH >	
S7201	1-762-303-11	SWITCH, PUSH (1P-1T) (FF)	
S7202	1-762-303-11	SWITCH, PUSH (1P-1T) (REW)	
S7203	1-762-303-11	SWITCH, PUSH (1P-1T) (PAUSE)	
S7204	1-762-303-11	SWITCH, PUSH (1P-1T) (REC)	
S7205	1-762-303-11	SWITCH, PUSH (1P-1T) (PLAY)	
S7206	1-762-303-11	SWITCH, PUSH (1P-1T) (STOP)	
*	A-6796-270-A	VP-1 BOARD, COMPLETE	
		**********	
		< CAPACITOR >	

C1801	1-162-207-31	CERAMIC	22PF	5%	50V
C1802	1-162-219-31	CERAMIC	68PF	5%	50V
C1803	1-164-073-11	CERAMIC	100PF	10%	50V
C1804	1-162-211-31	CERAMIC	33PF	5%	50V
C1807	1-124-465-00	ELECT	0.47uF	20%	50V
C1808	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1809	1-127-550-11	ELECT (SOLID)	3.3uF	20%	16V
C1814	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1815	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1816	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1817	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1819	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1822	1-164-073-11	CERAMIC	100PF	10%	50V
C1823	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1824	1-161-379-00	CERAMIC	0.01uF	20%	25V
C1825	1-161-057-00	CERAMIC	0.033uF	10%	50V

Ref. No.	Part No.	Description	Remark
		< IC >	
IC181	1-810-869-11	IC LA7411	
		< COIL >	
L1801	1-410-513-11	INDUCTOR 22uH	
L1802	1-410-525-11	INDUCTOR 220uH	
L1803	1-410-521-11	INDUCTOR 100uH	
L1804	1-408-104-00	INDUCTOR 1mH	
		MISCELLANEOUS	
		**********	
5	1-693-295-11	TUNER (RF/TU/IF) (E110IT)	
5	1-693-331-11	TUNER (RF/TU/IF) (E105)	
23	1-775-506-11	CABLE, FLEXIBLE FLAT	
* 55	1-461-017-11	ROTOR	
57	1-411-291-11	STATOR (MOTOR CYL) DC 2W	
110	1-810-691-11	PHOTO DIODE PN263L-NC	
116	1-810-692-11	PHOTO DIODE ON2170-R	
130	1-810-690-11	LED LN59L	
178	1-698-590-11	MOTOR, CAPSTAN DC 3W	
		ACCESSORIES & PACKING MATERIALS	
		**********	
	1-473-155-41	REMOTE COMMANDER (RMT-V166B)	
⚠	1-590-224-11	CORD, POWER	
	1-765-904-11	CABLE, ANT	
	3-708-885-01	COVER, BATTERY	
	3-810-359-12	MANUAL, INSTRUCTION (ITALIAN) (E110IT)	
	3-810-360-11	MANUAL, INSTRUCTION (SPANISH) (E110IT)	
	3-810-361-11	MANUAL, INSTRUCTION (PORTUGUESE) (E110IT)	
	3-810-362-11	MANUAL, INSTRUCTION (GERMAN) (E105)	
	3-810-363-11	MANUAL, INSTRUCTION (FRENCH) (E105)	
	3-810-364-11	MANUAL, INSTRUCTION (DUTCH) (E105)	
*	3-963-646-01	CUSHION (FRONT)	
*	3-963-647-01	CUSHION (BACK)	
*	3-968-702-01	INDIVIDUAL CARTON (E110IT)	
*	3-970-154-01	INDIVIDUAL CARTON (E105)	
		**********	
		HARDWARE LIST	
		**********	
#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
#2	7-685-661-19	SCREW +BVTP 4X12 TYPE2 N-S	
#3	7-685-645-79	SCREW +BVTP 3X6 TYPE2 N-S	
#4	7-685-547-19	SCREW +BTP 3X10 TYPE2 N-S	
#5	7-682-648-09	SCREW (3X8), +PW	

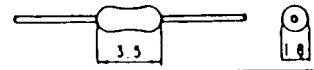
When indicating parts by reference number, please include the board.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

SLV-E105/E110IT

Description

CARBON RESISTOR 5% ¼W A 5% ¼W



Value	Part. No.	Value	Part. No.	Value	Part. No.	Value	Part. No.	Value	Part. No.	Value	Part. No.
0.22Ω		11Ω	1-247-784-00	200Ω	1-247-814-11	3.6kΩ	1-247-844-11	62kΩ	1-247-874-11	1.2MΩ	1-259-877-11
0.27Ω		12Ω	1-249-394-11	220Ω	1-249-409-11	3.9kΩ	1-249-424-11	68kΩ	1-249-439-11	1.5MΩ	1-259-878-11
0.33Ω		13Ω	1-247-786-11	240Ω	1-247-816-11	4.3kΩ	1-247-846-11	75kΩ	1-247-876-11	1.8MΩ	1-259-879-11
0.39Ω		15Ω	1-249-395-11	270Ω	1-249-410-11	4.7kΩ	1-249-425-11	82kΩ	1-249-440-11	2.0MΩ	
0.47Ω	1-249-377-11	16Ω	1-247-788-00	300Ω	1-247-818-11	5.1kΩ	1-247-848-11	91kΩ	1-247-878-00	2.2MΩ	1-259-880-11
0.56Ω	1-249-378-11	18Ω	1-249-396-11	330Ω	1-249-411-11	5.6kΩ	1-249-426-11	100kΩ	1-249-441-11	2.7MΩ	1-259-881-11
0.68Ω	1-249-379-11	20Ω	1-247-790-11	360Ω	1-247-820-11	6.2kΩ	1-247-850-11	110kΩ	1-247-880-11	3.3MΩ	1-259-882-11
0.82Ω	1-249-380-11	22Ω	1-249-397-11	390Ω	1-249-412-11	6.8kΩ	1-249-427-11	120kΩ	1-247-881-00	3.9MΩ	1-259-883-11
1.0Ω	1-249-381-11	24Ω	1-247-792-11	430Ω	1-247-822-11	7.5kΩ	1-247-852-11	130kΩ	1-247-882-11	4.7MΩ	1-259-884-11
1.2Ω	1-249-382-11	27Ω	1-249-398-11	470Ω	1-249-413-11	8.2kΩ	1-249-428-11	150kΩ	1-247-883-00	5.6MΩ	
1.5Ω	1-249-383-11	30Ω	1-247-794-11	510Ω	1-249-442-11	9.1kΩ	1-247-854-11	160Ω	1-247-884-11	6.8MΩ	
1.6Ω		33Ω	1-249-399-11	560Ω	1-249-414-11	10kΩ	1-249-429-11	180Ω	1-247-885-00	8.2MΩ	
1.8Ω	1-249-384-11	36Ω	1-247-796-11	620Ω	1-247-826-00	11kΩ	1-247-856-00	200kΩ	1-247-886-11	10MΩ	
2.2Ω	1-249-385-11	39Ω	1-249-400-11	680Ω	1-249-415-11	12kΩ	1-249-430-11	220kΩ	1-247-887-00	12MΩ	
2.4Ω	1-247-768-00	43Ω	1-247-798-11	750Ω	1-247-828-11	13kΩ	1-247-858-11	240kΩ	1-247-888-11	15MΩ	
2.7Ω	1-249-386-11	47Ω	1-249-401-11	820Ω	1-249-416-11	15kΩ	1-249-431-11	270kΩ	1-247-889-00	18MΩ	
3.0Ω	1-247-770-00	51Ω	1-247-800-11	910Ω	1-247-830-11	16kΩ	1-247-860-11	300kΩ	1-247-890-11	22MΩ	
3.3Ω	1-249-387-11	56Ω	1-249-402-11	1.0kΩ	1-249-417-11	18kΩ	1-249-432-11	330kΩ	1-247-891-00		
3.6Ω	1-247-772-00	62Ω	1-247-802-11	1.1kΩ	1-247-832-11	20kΩ	1-247-862-11	360kΩ	1-247-892-11		
3.9Ω	1-249-388-11	68Ω	1-249-403-11	1.2kΩ	1-249-418-11	22kΩ	1-249-433-11	390kΩ	1-247-893-11		
4.3Ω	1-247-774-00	75Ω	1-247-804-11	1.3kΩ	1-247-834-11	24kΩ	1-247-864-11	430kΩ	1-247-894-11		
4.7Ω	1-249-389-11	82Ω	1-245-404-00	1.5kΩ	1-249-419-11	27kΩ	1-249-434-11	470kΩ	1-247-895-00		
5.1Ω	1-247-776-00	91Ω	1-247-806-11	1.6kΩ	1-247-836-11	30kΩ	1-247-866-11	510kΩ	1-247-896-11		
5.6Ω	1-249-390-11	100Ω	1-249-405-11	1.8kΩ	1-249-420-11	33kΩ	1-249-435-11	560kΩ	1-247-897-11		
6.2Ω	1-247-778-00	110Ω	1-247-808-11	2.0kΩ	1-247-838-00	36kΩ	1-247-868-11	620kΩ	1-247-898-11		
6.8Ω	1-249-391-11	120Ω	1-249-406-11	2.2kΩ	1-249-421-11	39kΩ	1-249-436-11	680kΩ	1-247-899-11		
7.5Ω	1-247-780-00	130Ω	1-247-810-11	2.4kΩ	1-247-840-00	43kΩ	1-247-870-11	750kΩ	1-247-900-11		
8.2Ω	1-249-392-11	150Ω	1-249-407-11	2.7kΩ	1-249-422-11	47kΩ	1-249-437-11	820kΩ	1-247-901-11		
9.1Ω	1-247-782-00	160Ω	1-247-812-11	3.0kΩ	1-247-842-11	51kΩ	1-247-872-11	910kΩ	1-247-902-11		
10Ω	1-249-393-11	180Ω	1-249-408-11	3.3kΩ	1-249-423-11	56kΩ	1-249-438-11	1.0MΩ	1-247-903-00		

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